Amateur Radio

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General

Technical

Columns

This month's cover

Primary school students participate in amateur radio as part of a School Amateur Radio Club (SARC). Julie VK3FOWL and Joe VK3YSP tell how they have set up SARC activities at several schools in Melbourne. See the story commencing on page 6. Also on the theme of engaging students with radio and electronics, see the report on the Science Week activities undertaken by REAST in Hobart, on page 22. Photo by Joe Gonzales VK3YSP.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are welcome and will be considered for publication. Articles attached to email are especially welcome. The WIA cannot be responsible for loss or damage to any material. Information on house style is available from the Editor.

Back Issues
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The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editorial

Peter Freeman VK3PF

To support or not?

As an Assessor, I well know the need to be supportive of trainees and new licensees. After all, every one of us was a beginner in this diverse hobby at some stage, even if that was many years ago.

Every amateur should be supportive of each other, even if it is an amateur who may not be acting in the expected manner. In such a case, we should politely, and in a supportive manner, advise the amateur of the errors being made. This could be a simple as pointing out that the microphone gain and/or compression settings appear to be set to high, resulting in a wide and distorting signal which causes issues with nearby users.

You might express your support in other ways: an obvious example for me is to call an amateur who is activating a Park which I already have in the log. I do not personally need the Park, but the Activator needs 44 different callsigns in his/her log to qualify the Park for the international WWFF award scheme. In VK, it can be hard work to reach the required quota. There is no benefit for me, but a significant benefit for the Activator if I make the contact – a simple way to support the Activator. Of course, I could simply continue tuning on the band: no one other than myself would know that I was aware of the Activator calling repeatedly with few responses. It is your choice – to support or not.

These are simple examples. Yet I occasionally here of instances of some individuals who go beyond simply ignoring of a station calling (being passively unsupportive) to become an active denigrator (really, acting as a bully, if the action is repeated). I am not talking about the odd poorly considered comment, but comments that are deliberately directed against an amateur on more than a single occasion. I do not know why some behave in such a manner. What does such behaviour achieve for the perpetrator? Perhaps some ill-conceived self-satisfaction? In reality, all such behaviour only diminishes the perpetrator and causes angst for the recipient of the poor behaviour. Some find the experience so disturbing that they decide to exit the hobby, because of the actions of one or a few individuals who act as bullies.

We should all fight against such behaviour. We should all be supportive of others in our hobby, if not by actively showing our support, then at least by not taking actions which will harm the other operator/s. Preferably, we should stand up for an operator who is subject to bullying. In fact, the WAARN website has a page concerning bully in amateur radio, which includes an Amateur Radio Bully Report Form: http://www.vk6.net/bully

We can see in this month's President's Comment that there are some dissenting views amongst the members of the WIA Board. We should not be surprised that a group of individuals will not always agree, especially when they are required to act as a Board of Directors. In addition to the normal differences of opinion, they are also required to act in accordance with the Constitution of the organisation (in this case the WIA) but also in accordance with

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WIA comment

Phil Wait VK2ASD

Don't let Elephants stand in the way

It's impossible to start this month's President's Comment without mentioning the "elephant in the room". That is, at the 16 August Board meeting, two WIA Directors proposed and seconded a motion of no-confidence in the WIA Board.

The Director moving the motion expressed the view that the Board was not acting in the best interests of the WIA, and therefore proposed that in view of its incapability of acting properly, it should resign, an independent administrator be appointed to run the business of the WIA, and elections be held. The motion was put and defeated five votes to two.

Only the members in a general meeting can remove Directors, as provided by the WIA Constitution or the Corporations Act. Secondly, motions of "no confidence" have no effect or validity in corporate law, according to a text on company meetings compiled by HA Davidson, a solicitor of the Supreme Court of NSW. A judgement in a modern-day case said: ". . . *the Parliamentary convention which required a government to resign on the passing of such a motion was not applicable in corporation law, and there was no convention 'that a board of directors against whom a no confidence motion is passed must tender their resignation . . .'; And: ". . . it does not appear . . that a motion of no confidence would be a motion which could be validly passed by the appropriate meeting."* [Stanham *v* The National Trust of Australia (NSW)].

In other words, a motion of no confidence moved by a Director against the WIA Board has no effect, but in this instance I chose to allow the motion to be put in the interests of open discussion. The two Directors have more recently publically announced they have obtained legal advice and say they will be making further announcements, though at the time of writing the Board is not aware of what those *"announcements"* may be.

No doubt this issue will continue to play out as the year progresses, but the Board is determined to act in good faith in the best interests of the corporation, and that its advocacy work and the services it provides to its members and to the wider Amateur Radio community, and its important international work, should not be affected during what is shaping up to be a fairly difficult period.

Now that's said, let's get on to what I really wanted to talk about:

The diversity of Amateur Radio.

One of the great things about Amateur Radio is its diversity. Amongst the fraternity you will find a huge variety of people and interests, from highly trained technical and engineering specialists to people who have simply taken amateur radio up as a bit of light entertainment, and everything else in between.

For some, Amateur Radio is about building, experimentation and learning, or working DX and entering competitions, or education, or being part of a community or, for some, seeing the smiles on people's faces when they achieve their licence and first get on-air.

This diversity is what makes Amateur Radio strong and enduring in the face of other rapidly advancing communicating technologies, but it makes the job of the WIA all the more difficult. The WIA can't possibly be all things to all people, and it shouldn't try. In my mind, the role of the WIA is to be an advocate for the diversity of Amateur Radio and to work to improve the regulations, conditions and opportunities for individuals to do whatever they want to do in the hobby, within the law and without causing problems for others, naturally. That is the major role of the WIA; to advocate, facilitate, encourage and support, rather than promoting some type of activity or technology over another.

My particular interest is building things and experimentation, though I've had precious little time to do any of that lately and it doesn't look like getting any better! If (when) I get the time, I would like to see where I can take the low power LORA technology on 433 MHz, which is basically a chirp modulation scheme that allows decoding a digital signal way below the noise floor, without the usual critical frequency control. Google 'LORA wireless', you will be surprised what you find.

Speaking of facilitating, the WIA is holding a STE(A)M education symposium in November, where we hope to get together the various people already involved in youth and vocational education through Amateur Radio, and to try and come up with some strategies and ideas for Amateur Radio's involvement. There is not likely to be a one-size-fits-all approach to STE(A)M, but

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WIA news

Are your details correct on WIA membership records?

In this digital age it's important to be correctly recorded with your current postal and email addresses, to make sure you are kept informed. The problem is made more difficult because of an anti-spam measure used by some internet service providers to no longer bounce invalid email addresses and organisations are unaware of changes to email addresses. This can and does affect membership renewal notices and the services through the Membership Management System called MEMNET.

It's easy to check your records online through MEMNET, and the small number who don't use email can update their details by using the Member Inquiry form.

MEMNET was launched two years ago and has about 75 per cent of the membership registered. It has now been substantially upgraded reflecting the comments received, making it more user friendly. It enables the digital edition of Amateur Radio magazine to be downloaded, participation in the WIA awards program, and more.

Get with the digital age by registering with MEMNET today, or check that your details are correct.

WIA takes steps to reduce its postage costs

The hike in postage rates by Australia Post late last year has resulted in a review of how organisations communicate with customers and members. Banks and many other service providers are now encouraging their customers to receive notifications and accounts electronically. The ACMA, and all of government, prefer to use electronic methods including website logins, SMS messages and email.

The WIA is no different, and recently it has conducted a review of our postage expenditure, as mentioned at the annual general meeting on Norfolk Island. Of course some things must, for the time being at least, be sent through the postal system. However, the WIA has already taken steps to reducing postage where possible.

Exam Service

The WIA Exam Service has been using the now very expensive yellow Express Post satchels to send out exam packs. This is changing to the red ordinary post satchels which are a little slower delivery but still have tracking. This action will have a minimal impact on Assessors as the majority hold sufficient exam packs, and are ordering them well in advance of assessment dates.

AR Magazine

The WIA has introduced a paper magazine opt-out system for members that only wish to receive the digital copy of *Amateur Radio* magazine, not the paper copy in the post. That will further ease the pressure on the postage costs. Members who don't wish to receive the magazine in the post should log into Memnet via this Link and select "Update Details" marking the check the box "Do Not Send Hardcopy *AR* Magazine". Alternately you can use the Contact WIA form on the WIA website and send a message to WIA National Office providing your member number and request to opt out from receiving the paper edition.

Remember, this is an Opt-out system - those members who still value their paper copy of *AR* magazine delivered in the post will not be affected, and do not have to do anything.

WIA recruitment, digital *AR* magazine, and the Committee System

The WIA Board continues to discuss a range of matters on its busy agenda each month.

An idea floated at the AGM was to give all new radio amateurs a period of free WIA membership with hard copies of the *Amateur Radio* magazine in the post. It fits in with the WIA Board priority of seeking to recruit new members. It was a good suggestion however, after investigation, it was considered that the administration costs of the proposal would be too high.

Out of this exercise came a better way to effect the original recruitment tool. This would be a coupon system that allows new amateurs to download a free digital edition of *Amateur Radio* magazine, for a limited period. The Board decided to move ahead with development of such a coupon system for new radio amateurs.

On another matter the WIA Board is keen to strengthen is the WIA Committee System.

A new structure was discussed where each Committee could consist of a Director, and a Committee Leader. This would reduce the day-to-day involvement of Directors, except in Committees dealing with Regulatory, Financial and Administrative issues.

Instead of having them all just called a Committee, it was decided to reflect more closely their purpose and method working, with them to fall under four categories.

Permanent Committee: One that acts together or meets regularly, to effect its on-going functions or tasks.

Advisory Groups: Set up on an ad-hoc basis to provide advice to the WIA Board.

Working Groups: To study and report on all aspects of a particular issue, and make recommendations.

Taskforces will work on a single, defined task or activity to be completed within a specified time frame.

WIA comment

Continued from page 3

rather a diversity of approaches to meet local needs, which the WIA may be able to help facilitate.

Some people seem to have the impression that the WIA has a 10-story building at Bayswater with steam coming out the top, with operators sitting by the phone ready to take your call. Anything is further from the truth: with two full-time staff members, one who works almost solely on the examination and callsign work, and the other doing just about everything else, the WIA's National Office is a very small and very busy place. Most current issues relate to a lack of resources, rather than any lack of will, energy or enthusiasm.

A recent example where the WIA primarily acted as a facilitator was during the ANZAC Centenary Commemorations, where the WIA organised and issued special event callsigns that were then taken up and used by a very large number of amateur stations. That job alone was a major exercise in organisation and logistics done on behalf of the Amateur Radio community.

As I said above, the WIA cannot be all things to all people, and again I emphasise – frankly, it shouldn't try. If Amateur Radio is going to be relevant in tomorrow's society it's going to be individual amateurs following their individual passions that take it in new directions.

The WIA can represent amateurs internationally, and advocate for the necessary regulatory environment, and facilitate, encourage and support, but it can't pull some magical rabbit out of a hat that makes it all happen without grass-roots innovation and support.

P.S. Please check out the advertisement for WIA Treasurer on the website (and, soon, elsewhere); this is an opportunity to really help your hobby and the Institute. Next month I will be visiting the Hong Kong Electronics Fair, which I attend every few years for my work, and will be spending some time in China. So, Vice-President Fred Swainston will step-in and give me, and you, a break.

Editorial

Continued from page 2

any other applicable legislative instruments.

Over recent months, we have seen information which notes that WIA Board members will be required to complete Corporate Governance training. One would expect that all the individuals will become aware of their formal responsibilities once such training is completed.

Until that training is complete, I believe that we should support the Board and the Institute as they attempt to guide the WIA through our current difficulties. On the financial front, members are asked to consider if they wish to support the organisation by opting out of the receipt of a hard copy of this magazine.

How else can we support the organisation? We can provide input on the occasions that input is requested. We can maintain our membership of the organisation: even if you are unhappy with some aspect of how the WIA works, seriously consider if you wish to no longer be a member. We already have the majority of amateurs in the country not supporting the WIA by being members, for reasons that are rarely specified. Perhaps this is due to financial constraints, perhaps due to some perceived slight against the amateur at some time in the past, or simply through laziness. Yet all amateurs benefit from the higher level actions of the WIA, even if they do not use (or wish to use) some of the more tangible benefits of membership (magazine, QSL bureau, etc.).

But some individuals, both members and non-members, continue to attack the WIA, especially on social media platforms. I guess that is their prerogative, but consider if it really moves us in the right direction? Some claim to supportive of the WIA and that they simply wish to bring about reform within the organisation. Whilst such goals may be noble in intent, are the actions of these "reformers" really helping? One suspects that all the discussions, factual or not, do not assist the WIA. Some resort to simple sniping at the organisation – such action helps nobody.

I suggest that you all consider carefully the manner in which you choose to support the hobby, by your on-air behaviour towards others, in off-air interactions and all other actions. Support your local club and our national organisation: be a financial member, provide considered feedback via the appropriate channels, and become more actively involved.

Until next month,

Cheers,

Peter VK3PF.

School Amateur Radio Clubs

Julie VK3FOWL and Joe VK3YSP

Photo1: School amateur radio clubs cater for a select group of students.

Julie and Joe set up three primary school amateur radio clubs in Melbourne. The clubs provide a worthwhile extra-curricular activity for the schools and are appreciated by principals, teachers, parents and students alike. They explain how the clubs work and how to set them up.

Since some of you reading this article will be unfamiliar with amateur radio, we will start with a short introduction: Modern amateur radio is a community-aware, technology-based and rewarding hobby. The purpose of amateur radio is largely self-education and technical experimentation, but through the medium of radio communications operators around the world form long-term friendships thereby fostering international good will.

Amateur radio is challenging. There are many popular Australian and international contests for operators to hone their skills. For example: By making as many contacts as they can over a day or a weekend or by trying to contact certain countries or states. Amateur radio has become an outdoor sport of sorts for many enthusiasts

Photo 2: Young mad scientists at work on their electronics project.

engaged in portable radio operation from mountain summits, national parks, museums, lighthouses and many more places.

Amateur radio clubs actively support local community activities and provide free communications for public events. Through club meetings and organised events they provide an enriching environment for experimentation, construction, technical advancement and social activities. On a more serious level, amateur radio civil emergency networks are always ready to provide emergency communications in case of natural disaster.

Recently, there has been resurgence in amateur radio participation due to simplified licencing conditions, the availability of low-cost radio equipment and no minimum age requirement. This has provided a new opportunity for primary school students, even as young as nine, who have successfully obtained their own amateur radio foundation licence.

Unlike "Citizens Band", all amateur radio operators are licenced and must identify themselves using their individual call signs. Amateur radio communications is subject to the Radio Communications Act and is regulated by the Australian Communications and Media Authority thereby providing an open, safe and friendly environment for adults and children.

Photo 3: Everyone in the group is equal; has a job to do and you have to be polite!

Now it is a fact that school amateur radio clubs used to be far more common than they are today. They were once a refuge for some students who didn't quite fit in to the often-competitive, sports-orientated, mayhem of school lunchtimes.

They were indeed a haven for all those with an interest in "pulling things apart to see how they work", "just tinkering around with stuff" and "seeing what will happen if I do this". Of course the students didn't know it then, but they were developing all the skills needed for a career in science and technology. How many of you reading this article today will remember being just like that when you were at school?

Photo 4: Morse code, the all-time, absolute favourite radio club activity. Believe it or not!

In those days the idea of a primary school amateur radio club was completely out of the question; when there was a minimum age requirement and difficult operator qualifications needed just to obtain an amateur radio licence. Amateur radio was clearly not for kids! But times have changed with the introduction of the amateur radio Foundation licence and so there are many new opportunities for young people today.

Some will still say that primary school students (and we are talking ages six to twelve here) are too young for amateur radio. Many operators with young children, grandchildren or having experience with the Scout's annual Jamboree On The Air will tell you that young people often have mixed feelings when it comes to using a radio. They can be shy; don't know what to say on air and are intimated by all the adults pressuring them to "just press this button and speak into the microphone".

It seems that amateur radio just doesn't come naturally to youngsters. Or so you might think. But if you put the same children into a familiar, non-threatening environment, give them some practice, praise and confidence with what they are doing; especially let them learn from their slightly-older mentors and you will be very surprised indeed. Sure, they are not going to be skilled operators overnight, but you will see them having a lot of fun, learning so much and wanting to do it all again next week. Perhaps one day, not too far into the future, some of them will remember their first experience of amateur radio and it might just change their lives for the better.

As one famous Nobel Laureate, Albert Einstein Medal winner and amateur radio operator recalls:

"Ten years of fascination with amateur radio in the 1950s led me to a professional life in basic research and university teaching. Over the next forty years, my research in radio astronomy taught me a great deal about extracting extremely weak signals from noise, and analyzing their content. In 2001, back on the air as an active radio amateur, I began thinking about ways to apply techniques, learned and developed in the research world, to the problems of weak-signal communication on our VHF and UHF bands." - Dr. Joe Taylor, K1JT.

So what does it take to interest primary school students in amateur radio these days? Well, for a typical group with enquiring minds and not much else to do at lunch time, surprisingly very little. For a start they are way smart enough to realise this is a whole different thing from mobile phones, social media and the Internet.

When they first hear the voices of far-off stations through the crackling sounds of shortwave radio, they instantly realise they are very privileged to be listening to a larger world. You can tell when they tentatively ask you the question: *"Can we talk to them too?"* And they are always simultaneously amazed, excited and a little terrified at the

Photo 5: It is important to keep the conversation going... "What's your dog's name?"

Photo 6: Beep, beep, beep: "Look what we found in the bushes!"

response: *"OK, why don't you try."* But without exception the look on their faces, when a station first acknowledges their name over the air, has to be seen to be believed.

From that point on they are hooked. Next, their parents tell us that their children can't wait for radio club and they won't stop talking about it at home. Of course it is not everyone's cup of tea, but for the few that return week after week an amazing transformation occurs, as we shall see.

Now there are some important rules for primary school amateur radio clubs: The first is that everyone in the group, no matter what their age, is equal. The second is that everyone must help each other out. So far so good, but the third rule will probably surprise you: Everyone must be polite!

As all amateur radio operators know, when you are on the air you must be respectful and courteous to others at all times. You are an ambassador to your school, to your state and to your country. You have to say *"good morning"* or *"good afternoon"*, remember to give your name and to properly introduce the other members of your group. This is probably the most unexpected part of amateur radio for the students and it often requires a little practice. It is true that with great privilege comes great responsibility.

The next lesson is also fundamental. Most people think that amateur radio is just a licence

to communicate: Things like call signs, signal strength reports, details of your station etc. But instead, amateur radio is actually a licence to have a conversation, with anyone, anywhere, any age, regardless of gender, position or status, using your amateur radio of course. You have to remember that when you pick up the microphone you are having a conversation with a real person, who in time may even become a good friend.

So you need to make a good impression by talking about mutually interesting subjects. The most important skill of course is listening and then remembering to answer any questions. And to keep the conversation going it is always a good idea to ask your own question at the end of your transmission. Having a good conversation on the air is a real skill and it too requires some practice to gain confidence.

Photo 7: "Can we have radio club every day?"

Photo 8: Crazy antenna building project.

There is technically a lot to know about having a two-way amateur radio contact. The students learn about station call signs, when and how to use them and what each part of a call sign signifies. Making a call, answering a call, giving signal strength reports and calling CQ to all other stations, are all drills that the students practice before getting on the air for the first time.

When the shortwave band conditions are poor, the students have to know how to spell their names using the international radio alphabet (Alpha, Bravo, Charlie, etc.) Then there are numerous other codes and abbreviations used instead of common expressions, which may otherwise be lost in the noise. When conditions really get tough there is Morse code. And without exception the one session all the students like best, and you won't believe this, is Morse code practice. Sending their name using a real telegraph key is a buzz (excuse the pun).

It is not all hard work, though. There are also games, videos and activities to make each session more exciting. And to be fair, all this learning is just for fun and it does not substitute for a real amateur radio foundation licence course delivered by a trained examiner. But that is really the whole point: School amateur radio clubs are just a fun experience to get the students started.

So how do the on-air sessions work? Since only one student can talk on the radio at a time, and some groups have as many as a dozen students, the on-air sessions are structured and everyone gets a job to do.

The first task is to make sure that the equipment is connected correctly and working. The antenna, microphone and power supply plugs into the radio. Check! Then it is time to tune around the band listening very carefully for any activity. Students write down the frequency of any stations heard as well as frequencies where there is annoying interference from nearby electrical and electronics devices.

Photo 9: "Which is better, voice or Morse?" (Note: Transmitter footswitch connection)

Next, several on-line databases are checked for the frequencies of any scheduled activity from portable stations activating summits or parks. There are also regularly scheduled nets to listen to. Any stations heard are immediately looked up on an on-line directory to check their names, locations and even to see photographs of the operator and their station equipment. Sometimes stations are called at pre-arranged times or the students join in on a net. Sometimes they call CQ to see who else is listening.

When a two-way contact begins there is always a lot to do: All the operator and station details are entered into the station log book. Students record the time in UTC, call signs, frequency, mode, signal strength, name, location and any questions asked. Students take it in turns to answer and ask questions and they use the operating procedures that they have been practicing. After the session they talk excitedly about whom they contacted and how they did on the air.

By now you are probably wondering all about security and other issues with children getting on the air. Well, there really isn't a problem. Here's why: The same precautions that apply to primary school student Internet use also apply on the air. The students are very familiar with the drill: *"Don't give your full name or location."*, *"Don't provide any private information."* etc. The difference is that all radio contacts must be fully supervised by the licensed school amateur radio club operator.

Of course the airwaves are completely open to anyone and both sides of the conversation can be monitored by others, and they often are. This sort of transparency helps keep all on-air conversations above board. In addition, all operators are licensed by the Australian Communications and Media Authority. They are bound by the codes of conduct stated in their licence conditions and the Radio Communications Act regulations.

Operators can easily be identified by their call sign; much like a car can by its number plate. Nevertheless, security is vital and requires vigilance.

Although operating procedures and on-air sessions are the main part of each lunchtime gathering other activities are also provided. For example there are simple sessions on: How radios work; how radio waves travel all around the world; the different parts of a radio station and the history of radio communication. For example: Did you know that shortwave radio communications is powered by the sun? It is very convenient that the school amateur radio clubs operate from the school library as there are many books and on-line resources for these subjects.

There are also some practical exercises to do like: Building and testing your own radio antenna; building your first electronic project kit, tracking down sources

of local radio interference and finding hidden transmitters in the playground. These activities are intended to provide the students with a taste for scientific enquiry, observation, research, experimentation, analysis and testing. Through amateur radio they realise they are part of a larger world and who knows where it will take them from there?

Now the main reason for this article is actually to encourage and help other amateur radio operators to set up and run their own school radio clubs. The primary school amateur radio club program presented here can easily be adapted for secondary schools. It would be suitable for any operators associated in some way with a school, for example a teacher, parent or relative.

But first there are a few important practicalities: You will, of course, need to obtain permission from the school Principal: We have prepared a school radio club proposal letter, which you may copy and modify, that sets out the purpose, format, requirements, setup and operation of the club. The Principal may need to show this letter to the School Board to get approval. You will have to meet with the Principal to go over the fine details of the operation and to provide assurances.

To access the school you will need a current Working With Children card. You will have to check that the School's insurance will completely cover your operation. You will also need to safely install an antenna and dedicate some of your own radio equipment to the school station. If you are a Foundation licensee yourself, you will need to use a footswitch to maintain control of the transmitter at all times. Finally you will need to devote lots of time to prepare and present a session each week during the school terms.

And why would you go to all this trouble, again? Simple: Just to see the look on the students faces when they get on the air! So what happens next? Well, news of the school amateur radio club quickly spreads throughout the school community. At assembly, the Principal explains the reason for the mysterious antenna that has appeared above the school building. Posters are put up around the school and newsletters are sent home. Parents visit the amateur radio station before or after school to investigate the strange sounds and curious activity.

Photo 10: "It's those radio club kids again. What are they doing now? How do you join?"

A small group of enthusiastic students is selected and asked to take home the school radio club booklet to read and a permission slip to sign. Our radio club booklet contains information on all the theory and practical sessions. It is also laced with imaginative, real-world scenarios to whet their appetites for amateur radio adventures and exciting activities. You can copy our booklet and modify it as you like.

Soon there is a waiting list of students eager to get started! After completing the six-week program students organise a presentation of their new skills at school assemblies: They say what they have done; who they have contacted on the air; they read out their name using the international radio alphabet or send it using Morse code; they show with pride the antenna they have made out of sticks and wire. Each of the students completing the program gets a certificate. Of course they are always welcome to return to the club as mentors. And most do.

If you are an amateur radio operator and are interested in taking this idea further please get in touch with us, we would love to help. Or if you are part of a school community and think this program would work in your area please get in contact with your local amateur radio club.

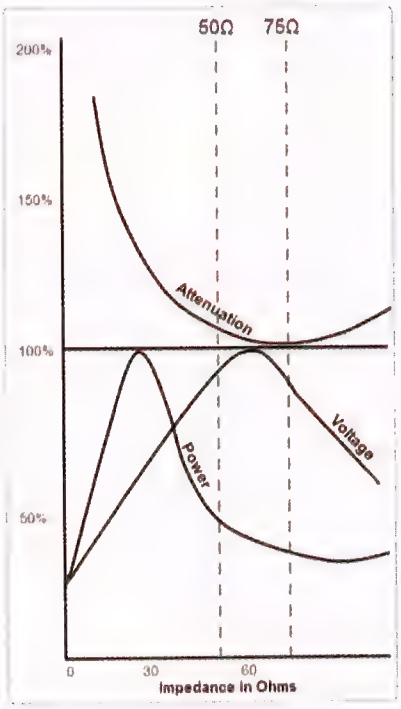
Our motivation for establishing school amateur radio clubs has always been to provide an enriching experience for the children. In doing so, we have been rewarded beyond all our expectations.

Our vision is that one day school amateur radio club children will enjoy many of the benefits that other amateur radio clubs take for granted like having their own regular on-air net (SARCNET), contests, Hamfests, field days, conferences; even a regular column in *Amateur Radio* magazine. And we firmly believe that their young, wondrous, smiling faces will change the face of amateur radio.

Please help us if you can. The children are our future.

What is so special about 50 Ohms?

Gary Gibson VK8BN



The power and voltage handling ability, and attenuation, of differing impedance coaxial line.

Have you ever wondered why most of our amateur radio equipment is designed for 50 ohm transmission lines? The Figure above was originally produced by two researchers, Lloyd Espenschied and Herman Affel, working for Bell Labs in 1929. Espenschied and Affel applied for and were granted a US patent # 1835031 for their Concentric Conducting System on 8 December 1931. Their graph shows the power and voltage handling ability of various coax impedances along with attenuation.

The characteristic impedance of coax cable formed by two concentric conductors can be calculated using the following formula $Zo = \frac{138}{\sqrt{\varepsilon}} \cdot \frac{D}{d}$

where D is inside diameter of the outer conductor, d is the outside diameter of the inner conductor and $\mathcal{E}$ is the dielectric constant of the medium between the two conductors, for air $\mathcal{E}$ is equal to 1.

As you can see from the graph, different impedance values are optimum for different parameters.

For minimum attenuation, the best impedance is 77 Ω and for best power handling 30 Ω is optimum, but for voltage handling ability 60 Ω is the impedance to use. 77 Ω airline was initially selected for systems where low loss was the major consideration, however power handling ability is way less than 50% of a 30 Ω line. 50 Ω sits about halfway between giving us reasonable attenuation and good voltage handling characteristics and reasonable power handling.

The major cause of breakdown in coax lines is generally due to voltage breakdown in systems with high VSWR, so voltage handling is a major consideration when coax cable is used with transmitters. On the other hand if you are looking for low loss for small signal applications you will be better off selecting a 75 ohm cable. An interesting fact to note is that if a 77 ohm airline is filled with polypropylene, which has dielectric constant of 2.3, the impedance is reduced to 51 ohm.

So as for most things in life, it appears that 50 ohm is simply just another compromise. It is also interesting to note that very few antennas that amateur's use naturally has a feed point impedance of 50 ohm without some form of impedance matching.

With the modest power levels used by amateurs and dipoles exhibiting impedances around 70 ohm with an SWR of somewhere near 1.5:1 on a 50 ohm system, it could be wise for the frugal amateur to transfer the mismatch from the antenna end of the cable to the transceiver end and consider using 75 ohm RG6 cable that is available for vastly less than RG213 with about the same attenuation characteristics.

WIA Treasurer being sought

The Wireless Institute of Australia is seeking a Treasurer to oversee the financial affairs of the Institute.

The voluntary role includes yearly budgets, WIA Board teleconference attendance, overseeing the auditing, insurance and ACMA deed of agreement matters.

A lot of the requirements will be familiar to members who are also Certified Practicing Accountants.

Further details and how to apply for the vacant Treasurer position can be found on the WIA website: *http://www.wia.org.au/*

Digital Transmission Done Properly

Stephen Ireland VK3VM / VK3SIR

There is a plethora of audio-digital transmission modes that are useable on FM and HF in the Amateur community and in regular use, with the most popular modes being RTTY-45, BPSK-31 and of course the new-kid-on-the-block, Nobel laureate Joe Taylor K1JT's JT-65 and JT-9. Note that this article is not primarily concerned with modes such as CW that transmit on a very narrow frequency; this article is concerned with digital modes that transmit over a range of frequencies - sometimes as low as 31 Hz deviation as is the case with PSK31.

Transmitting audio-range digital signals has for some time been of considerable interest to me as voice, my real passion, is hard to work from my QTH. Living in Murrumbeena, an inner suburb of Melbourne, noise levels and restricted space (12 m-wide-block) presents challenges and warrant considerable compromises. Yet working the enhanced digital modes, such as JT-65, enables me to make good, clean DX communication.

With the increased interest in Digital Communications, and especially the "JT" modes, has come quite a bit of discussion between many Amateurs about clean signal transmission and the increase in interference and splatter. This in itself is concerning - not only can nearby operators wipe out other Amateurs' potential to work DX but they can also be doing themselves and the Amateur community a great disservice. **Interference and splatter should not happen in a properly set up station.**

This is notwithstanding the potential EMR and hence safety issues that we can experience.

Photo 1: The SignaLink USB sound card - radio interface sitting about a transceiver. (Source: http://www.jeffreykopcak.com/wp-content/uploads/2015/11/signalink.jpg)

Accordingly, I have been asked by many Amateurs to pen this article to hopefully encourage good, respectful and safe operation within the Amateur community.

Basic Setup for Digital Communications

The basic setup involves connecting the sound card of a computer to your radio. There are many options available; this article will only provide an overview of how it is done with the most common devices and methods in use.

The most popular commercial unit appears to be the SignaLink USB unit as shown above. The SignaLink USB unit, despite its flaws, performs more than adequately for most amateurs.

Author's note: The SignaLink USB unit is well known to suffer noise issues due to poor coupling to an "unstable" USB power source – see http://freedv.org/tiki-index.php?page=Tigertronics

Ultimately all devices come down to the basic principles shown below:

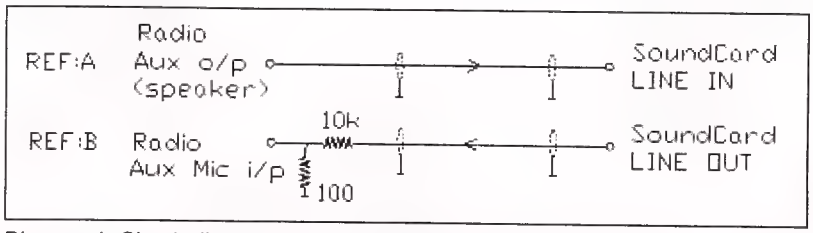


Diagram 1: Circuit diagram of the simplest possible interface between computer and transceiver. (Ref: http://www.qsl.net/wm2u/interface.html)

Many Amateurs operating on SOTA and other portable expeditions that use solely battery operated systems report the above elementary "direct connect" arrangement to be more than adequate. There is only one path for RF currents to flow to ground – through the Antenna system. Therefore, directly connected schemes with impedance matching, preferably in combination with external USB sound cards, often are adequate.

In the shack, where we most often use some form of power supply, multiple paths exist for RF and other currents to head to ground. Additional noise can be created in the system, introducing "birdies" and AC hum – and their harmonics – into the audio paths. These are known as ground or earth loops. We therefore need to utilise audio isolation techniques to minimise the effects of these loops. See Diagram 2 below.

The trend in modern radios, such as the FT-991 and IC-7300, is to have embedded isolated sound cards within their main boards and to connect these radios directly to the PC. With such radios external sound-card-to-pc interface devices are no longer needed.

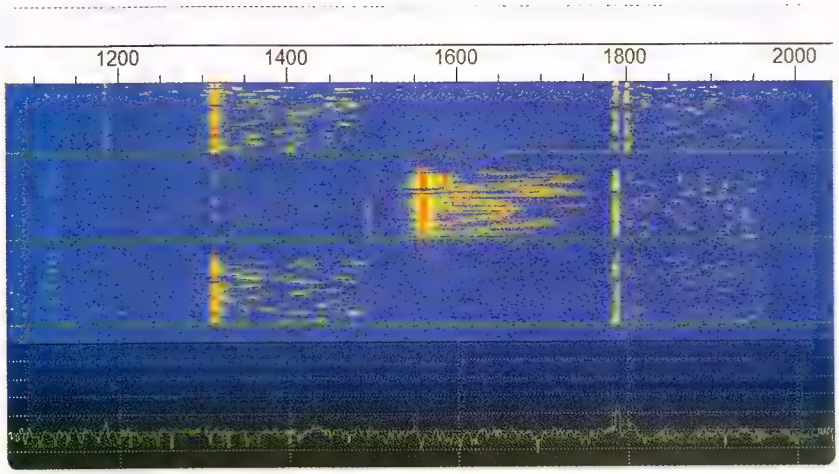


Photo 2: Waterfall display showing good clean signals and poor signals resulting from overdriven transmitters.

Software

There is a plethora of software out there that we can use and everyone has their own personal favourites. This article will not travel further down this path – but for reference I use "FLDIGI" (at *https://sourceforge.net/projects/fldigi/files/*) and the up-to-the-minute compiles of WSJT-X (Base install at *http://physics.princeton.edu/pulsar/k1jt/wsjtx.html*).

Author's note: I recompile my own, up-to-the-minute versions of WSJT-X using the JTSDK Software Developers Kit available at https://sourceforge.net/projects/jtsdk/files/win32/2.0.0/ Installation and compiling your own latest and fully up-to-date WSJT-X, with latest radio support, is beyond this article and may be the subject of a later article – but for those interested follow the link and the instructions therein carefully and use at your own risk operationally. Sometimes this "beta" software is not stable and has undesired transmission consequences.

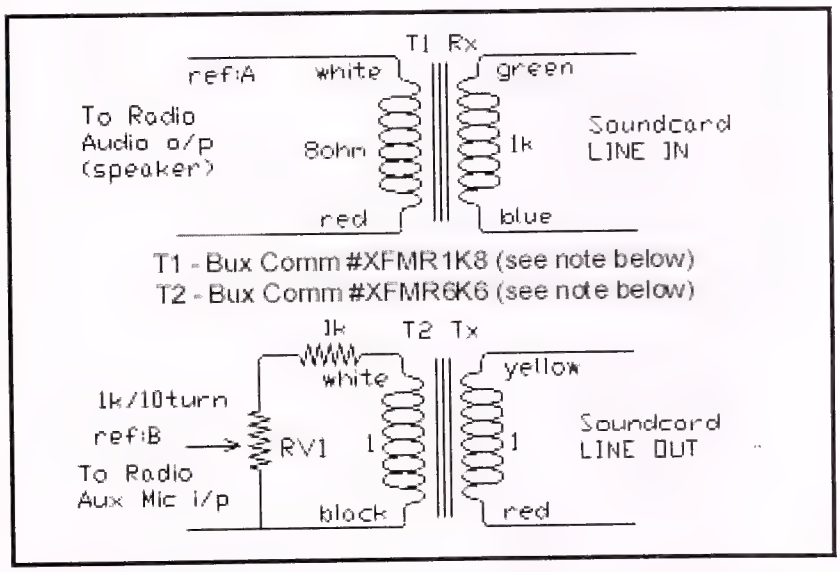


Diagram 2: Circuit diagram of a transformer coupled radio interface. (Ref: http://www.qsl.net/wm2u/interface.html)

Operation

This is where the biggest issue arises - correct operation of the software and optimal hardware settings in order to maximise the linear operation of the transceiver. This is not just an issue with digital operation - many of the same issues apply directly to voice transmissions.

Amateurs have noted a tendency for some amateurs to overdrive their signals into non-linearity: See Photo 2.

You will note in the waterfall image some signals that appear as clean marks and dots; yet there are other signals – often exceedingly strong – that appear fuzzy and distorted on the waterfall traces.

I have deliberately obscured some of the signals in the above image to protect sources from being identified. The strong signal at 1550 Hz offset in this example is not a local signal... it came from ZL!

Why are some signals appearing clean and others appearing "fuzzy"?

It is because the signals being input into the transceiver are not being reproduced accurately within the radio; signals are not being reproduced in a linear fashion.

All will recall from their Foundation, Standard, Novice, Limited or Advanced training that when the transceiver is not reproducing signals linearly that harmonics, hence interference, is being produced.

These fuzzy signals are not being reproduced properly by the transmitter; the clean transmissions are. These poor signals additionally take up extra bandwidth in the limited spectrum available. This is not an issue with the receiver– but is an issue for the sender. Fact.

These non-linear transmissions could be interfering with others around us and interfering with other licensees on other bands.

Even though many software packages and their intensive Fourier processing algorithms will often decode the signals, many digital-mode operators will IGNORE signals that appear "unclean" as it indicates a poor operator at the other end.

Author's Recommendation: Amateurs should, in my opinion, try to make respectful off-air communication with Amateurs that are observed to have issues so that the Amateur-with-issues can attempt to clean up their transmissions. Most amateurs can be contacted through QRZ. COM listings of email addresses.

Likewise, any amateur getting an email on such issues should look at any constructive criticism received as assistance.

Remember the old adage for HAM – Help All Mankind.

How to transmit a clean Digital Signal

The simplest way to transmit a clean signal is to stick to a few basic rules:

- Ensure that you are not putting the signal into the radio at a level that is too great for the radio to handle.
- Ensure that you are only transmitting the signal with the power that it needs to be transmitted at.

ALC – Automatic Level Control

If the Automatic Level Control (ALC) is being used "the radio ALC circuit can distort the signal and cause interference" (DeNeef 2016). Peter DeNeef, AE7PD has written a great article on ALC and how to use the ALC metering on your radio at *http://www.hamradioandvision.com/how-to-use-an-alc-meter/* This article should be essential reading for any Amateur transmitting digital signals through their radio.

Peter DeNeef's conclusions are of such considerable importance that I have cited these here:

- The ALC meter is an important tool for finding the best mic gain. Check the operating manual for recommendations. Many, but not all, radios are designed to work best when the ALC meter indicates only minimal activity.
- Both experts advise keeping ALC activity low—setting the mic gain so the meter just shows ALC activity on your voice peaks (eg, 3 - 4 bars on the FT-897D).
- Alternatively, use a wattmeter to find the point where the peak power stops increasing as you turn up the mic gain, and operate just below that gain setting. Note that the average power continues to increase with mic gain, well past the onset of ALC activity. Use the ALC meter, and avoid the temptation to maximize average power.
- Speech compression circuits (sometimes called speech processors) can cause distortion that decreases the intelligibility of your signal. G8JNJ advises turning off compression in the FT-897D unless your signal to noise level is low because of band conditions.
- If possible, use a second radio or the monitor function on your transceiver to listen to recordings of your audio.
- Collect on-air signal reports in a variety of band conditions.

(Source: *http://www.hamradioandvision.com/how-to-use-an-alc-meter/* accessed 10/4/16)

Summarised below is a set of practical interpretations of Peter AE7PD's conclusions:

- If your radio has ALC metering, ensure that the meter is set to display ALC then when you transmit digital signals.
- Adjust the input level of the signal to the transceiver using:
  - the device's level control, and/or
  - the radio's input gain, and/or
  - via the computer sound card "output-to-the-device" control
- Adjust the input level **just a fraction back** from any ALC cutting-in/showing on metering when you transmit.

The indication of any ALC circuitry "cutting in" should be avoided from my experience. I am a little more cautious than Peter AE7PD is with his recommendations.

Additionally, and/or alternative if ALC controls are not available, refer to Peter AE7PD's third point:

- Observe the power output on a wattmeter. Many auto-tuners (Such as the MFJ-9xx series) have inbuilt power monitors. Almost all Amateurs use SWR/ Power meters in their lines. If the power on transmit is not varying slightly on transmission, then you can almost be guaranteed

that the signal is not being reproduced in a linear fashion. **Drop the input level of the signal until you see the power level varying on transmit**. This should set the radio to be near the optimum transmit level for your signal.

Peter's point with regards to disabling speech compression circuits is also important. Many modern radios have digital sound inputs, often standardised through a 6-pin Mini-DIN connector, that automatically bypass any speech processor circuit. These inputs should be used along with appropriate radio mode settings to deliver/retrieve the signals to/from the computer. Just to be sure, **disable the speech processor** regardless when working with digital transmissions.

Author's Note: Even with phone transmission, excessive speech processor levels can force the radio into non-linear operation creating signals that are wider than they should be. This can lead to splatter and thus interference. On-air calibration with other amateurs with regards to setting appropriate speech processor levels is essential.

Excessive speech processing is often a major cause of splatter when using amplifiers.

Should you follow Peter AE7PD's guidelines along with some of my practical recommendations, you will more than likely will output clean signals. No guarantees are offered, though. You should also enlist the assistance of reliable amateurs – live on air – that you can rely upon to give you good and honest signal reports. Sometimes just dropping input and power transmission levels a fraction can be the difference between putting out a clean signal that amateurs will want to respond to or having the ACMA knocking at your door.

Remember that amateur radio is actually a social activity with regulated, technical elements.

EMR – Electro Magnetic Radiation Emissions

This is something that is often forgotten about by many Amateurs transmitting digital signals.

At the time of writing this article, amateurs were still subject to the Radiocommunications Act (1992) and Radiocommunications Licence Conditions (Apparatus Licence) Determination 2003. Part 3 – sections 8 to 13 of the "Apparatus Licence LCD" refer to compliance with electromagnetic radio emissions as specified in the ARPANZA standard AS/NZS 2772.2. Any future amendments to legislation will still require amateurs to remain compliant to relevant radiation standards.

Digital communications generally involve transmitting signals at a 100% duty cycle. As an example, JT65 involves transmitting a time-synchronised audio-frequency varying carrier at a 100% duty cycle for approximately 50 seconds every 120 seconds (a 77% form factor).

Amateurs must ensure that their transmissions are safe within the duration of their transmission. The mathematics, regulations and guidance around this are seen by many as being rather cumbersome and user-unfriendly. Doug McArthur VK3UM (SK) wrote his EMR calculator for amateurs to simplify calculation for the amateur community. At time of writing, this tool was available at *http://www.vk3um.com/emr%20calculator.html* (accessed 10/3/16).

Author's Note: Doug's loss was a significant blow to the amateur community; I have been in contact with the WIA and I have been assured that the WIA Board will be making effort to preserve his research; if not foster the continuance of his incredible works and tools in his memory.

Before anybody transmits any digital signal they should simulate the approximate characteristics of their transmission through the EMR Calculator tool. See Photo 3.

Photo 3 shows a JT65 signal, modelled on the 20 m band, transmitted at 100 W through a ½ wave dipole at height 6.2 m. The on-axis exclusion zone is calculated at 2.11 m, meaning that any man, woman, child or animal MUST be at least 2.11 m away from the antenna.

Amateurs must ensure that adequate exclusion and safety zones are in place to ensure that people in the community (and themselves) cannot come into contact with RF radiation at dangerous levels during operation.

Power Levels?

So what is a "good" power level to use for a digital QSO? The answer to this question is "how long is a piece of string"?

Some amateurs shun operators who use more than 30 W. I personally restrict my digital operations to 30 W just because of the proximity of my antennas to myself and the local community. Yet there may be instances when greater power is required to maintain the transmission or to catch a rare contact and break the "International Walls".

Remember these high duty cycles place high demands on equipment and resources; using high-duty-cycle modes may damage equipment, their final stages and internal filters with prolonged usage at sustained high power levels.

Author's Note: I have an LDG Z-11 Pro auto-tuner that I often used on 6 m into the VK3RMS repeater and on 10 m experiments on FM with EasyPal. The tuner, though rated to 120 W, managed to destroy several relays and explode internal inductors at power levels approximating 80 W FM.

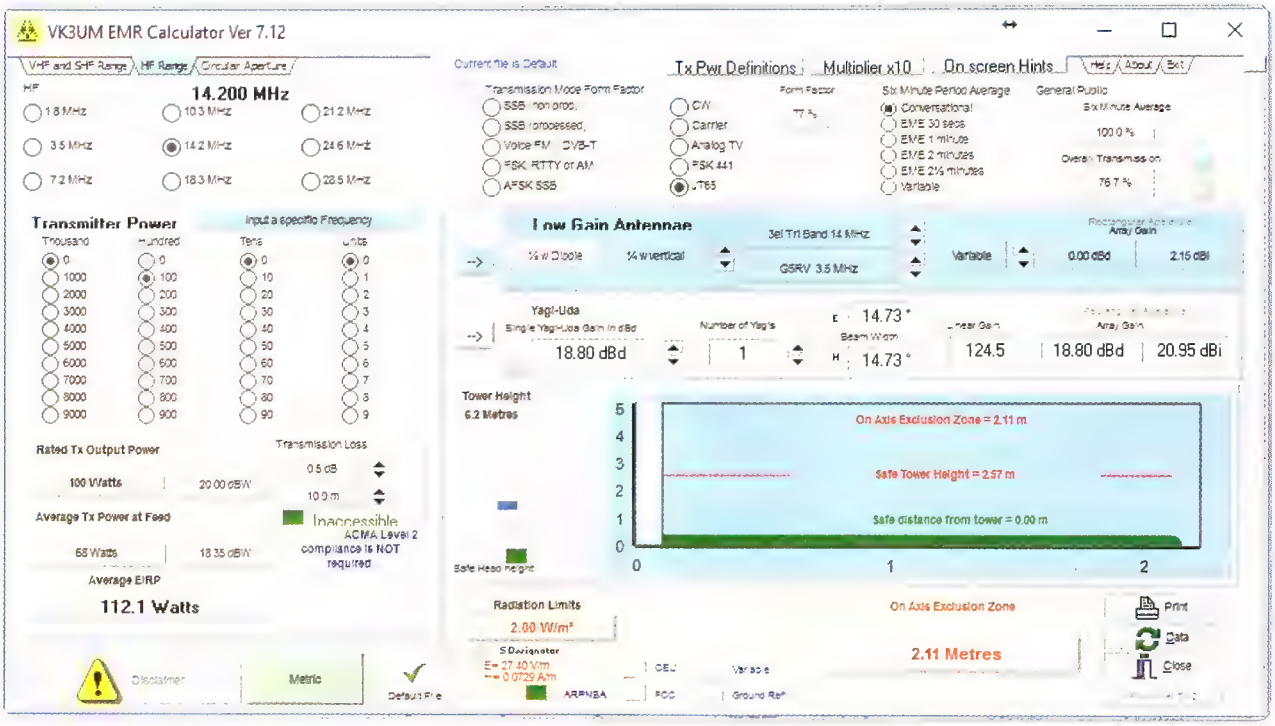


Photo 3: Screenshot of the VK3UM EMR Calculator software.

The best answer is that any communication should be conducted at the minimum required power needed to successfully establish and maintain the conversation with the additional caveats of:

- Communications must be at power levels that emit safe levels of EMR and that are below maximum Px/Py levels listed in the current Amateur LCD.
- Communications must be at power levels that will not cause interference to others in the community or other amateurs nearby.

Conclusion

Hopefully this overview and its generalisations will encourage Amateurs to show greater concern and respect for others when transmitting digital signals. There is of course the issue associated with transmitting a clean, intelligible signal that looks like it is emanating from a reputable, experienced amateur. There is also the issue of safety – an issue that has proven itself to be the major stumbling block with regards to the unsuccessful high power trial several years back.

But the main aim is to get amateurs thinking – thinking about what they are really doing and what they are trying to achieve. Sometimes I see amateurs just blowing radiation into the ether and getting little success from their toil. Hopefully this will help all amateurs to achieve better results that also do not present problems for others trying to use the bands.

I have also heard of late a lot of complaints from amateurs about "Wide", splattering transmissions emanating from amateurs that are obviously overdriving amplifiers – especially during contests. Hopefully this article will get amateurs thinking about the signals that they are driving not only into their radios but what happens to their signals once they are fed into Amplifiers. **Amplifiers are a great thing for amateur radio as long as they are used properly, safely and with respect.**

Amateurs with amplifiers driven to reproduce clean, linear signals are actually the greatest support to the QRP and/or SOTA operator, contrary to some beliefs. It is often the amateur that has that little bit more power that is able to support and sustain reliable two-way communication with SOTA and/or QRP operators from my experience. It is the poor operator that subscribes to the wrong myth of pushing equipment to its limits hence over-driving signals, demonstrating "wide" sometimes illegal signals, which cause interference and splatter. It is these operators that promulgate bad myths about the use of power in the Amateur community. It is also these operators that tend to be sending equipment in for service constantly.

All techniques introduced in this article are equally applicable to both digital and phone signals driven into amplifiers from transceivers. Simple techniques and devices for monitoring transmitted signals for linear output and hence safe, good operation will be the subject of a future article.

73

Steve Ireland VK3VM/VK3SIR
Assessor: 3-072

References

- DeNeef, Peter (2016) "Use An ALC Meter To Avoid Distortion & Interference" at *http://www.hamradioandvision.com/how-to-use-an-alc-meter/* accessed 10/4/16
- FREEDV.org (2016?) "Tigertronics: Notes for users of Tigertronics hardware" at *http://freedv.org/tiki-index.php?page=Tigertronics* accessed 10/4/16
- Kopack, Jefferey (2016??) *http://www.jeffreykopcak.com/wp-content/uploads/2015/11/signalink.jpg* accessed 10/4/16
- McArthur, Doug (2016) "VK3UM Electro Magnetic Radiation Calculator (EMRcalc)" at *http://www.vk3um.com/emr%20calculator.html* accessed 10/4/16
- Mills, Ernie (2016?) "Understanding Soundcard Interfacing" at *http://www.qsl.net/wm2u/interface.html* accessed 10/4/16
- "Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields - 3 kHz to 300 GHz" (2002) *http://www.arpansa.gov.au/publications/codes/rps3.cfm* accessed 10/4/16
- "Radiocommunications Act" (1992) at *https://www.legislation.gov.au/Details/C2016C00226* accessed 10/4/16
- "Radiocommunications Licence Conditions (Apparatus Licence) Determination" (2003) at *https://www.legislation.gov.au/Details/F2005B00255* accessed 10/4/16

Over to you

WIA Board

Here we go again!

Some years ago the WIA was organized on a Federal Basis. This structure destroyed itself on the continuing debates about process rather than production. In other words we were arguing about how we should do things rather than on what we should do.

The whole thing was manipulated by a small number who used legal threats and their own ideas to make the then WIA virtually unworkable. It was only due to the efforts of many unpaid but effective volunteers that anything got done at all.

Eventually after much lobbying, two very effective and professional people grasped the nettle and we changed to a truly national WIA. The squabbles and legalistic nonsense stopped and we seemed to be getting on with the real tasks facing the organization. Now I see that the old silliness is back.

Let us first get all this in perspective. The WIA is a small voluntary organization with less than 5000 members (shareholders) and a turnover less than $1M. There are two paid employees and the Board members get some of their costs refunded. They will always be out of pocket and give of their time for no recompense.

The major task is one that few amateurs are willing to undertake and is worth much more than they are willing to pay! That is representations at the Australian and International level. The WIA has been very fortunate in the people who have volunteered to go overseas and help the Amateur cause. Even to the extent of getting a respected committee position at the last ITU conference. Even though no-one gets paid for their time, it is still a very expensive exercise.

Service provision for Amateurs such as QSLs and the magazine are themselves quite costly. With recent postage increases it is certain that what was uneconomic ten years ago is now hopelessly inefficient.

Debate about Board process is wholly uneconomic. This is not a major public company. To train Directors is simply a waste of our money. We need an audit to ensure no-one has a hand in the till, and we need annual elections to ensure we are happy with the people we ask to run the place. Beyond that in a voluntary organization like ours, there should be no need to waste our limited resources on the 'how' not the 'what'!

There are always people expressing dissatisfaction with the WIA. In my 50 year experience, the major proportion of these just fail to understand how important is the representation of our hobby. To a government bureaucracy we are a nuisance which they would make go away if we were not vigilant. To others their objection to the WIA has more to do with their short arms and long pockets.

If you are elected to the Board and cannot work in a collegiate manner, then resign. We cannot afford to have distractions that have little or no real purpose. Having been a Director in a number of organisations and companies I am well aware of the responsibilities. I am also aware that there is a very expensive industry set up to teach what is nothing more than common sense to those who are voluntary amateur directors.

For most people this stuff about Directors and their responsibilities sounds like it is important and as it is well above their pay grade then they will see it as critical if someone says it is! Well it is not above my paygrade and I say nonsense. There is no indication that our Directors are lining their own pockets or doing anything that could be construed as illegal or fattening.

It is not worth destroying the credibility of the WIA because a few people have their noses out of joint and want to big note themselves as corporate experts.

Martin Luther VK7GN

Murray-Sunset NP solar lighting project

John Williams VK2AWJ

Photo 1: Jim Haywood on the roof with James VK2FDAQ holding the ladder.

Over the last weekend of August 2016, some members of Sunraysia Radio Group, under the leadership of David Carson VK3ZUA, installed solar panel lighting at the historic Shearer's Quarters in the Murray-Sunset National Park.

Historically, acetylene gas produced from calcium carbide and water provided lighting. In recent years, the gas lights had been converted to LPG.

The SRG lighting project is based on solar panels and LED lighting strips, with associated storage batteries and distribution panels. Wiring the four main rooms and two sleep outs meant crawling around in the roof space, locating holes drilled from below, then feeding the colour coded cables to LEDs and switches. Lights were also fitted above the BBQ verandah space, in the Laundry/Shower room and in the toilet.

Photo 2: Installing a mobile phone antenna in the Murray-Sunset National Park.

Photo 3: Mobile phone Yagi at the Shearer's Quarters.

Photo 4: John VK2AWJ activating Murray-Sunset NP for the KRMNPA.

Mobile phone coverage has been added by installing a 15-element 800 MHz Yagi on a 6 metre mast mounted and guyed on the roof. The coaxial cable is terminated at a passive folded dipole in the kitchen; where nearby mobile phones can connect to the outside world.

The author was given time to activate the park for the Keith Roget Memorial National Park Award (KRMNPA). For one hour on the Saturday afternoon and again on Sunday morning. Thanks to the 40 contacts who answered my 10 W signal. A KX3 transceiver was used, feeding an inverted vee, operating from my campervan.

A great time was had by all, with many tall tales told after the Saturday evening meal in the kitchen, warmed by a large wood-fired stove.

The SRG group: David Carson VK3ZUA, Graham Kenney VK3FTEC, Stephen Bourke VK3FSWB, James Oxlade VK2FDAQ, John Williams VK2AWJ, and Jim Haywood.

Photo 5: Members of SRG Group Graham VK3FTEC and Stephen VK3FSWB.

Festival of Bright Ideas

Justin Giles-Clark VK7TW

Photo 1: Lightwave Stage. (Photo courtesy of Sean VK7FAZE.)

Science Week 2016

The Festival of Bright Ideas event (1) is in its second year in Hobart, Tasmania. It is associated with National Science Week (2) and is held in the huge Princes Wharf No.1 pavilion. This year's Festival included 38 stands, six workshop areas, three tours and the main "Lightwave" stage with seating for over 200. Over 7000 people attended the Festival over the two days.

The format of the two days started on Friday (12/08/2016) being a school's day that saw over 1800 upper primary and high school students and 300 teachers from all over the state visit the various stands that were showcasing

Photo 2: REAST stand – volunteer Rod VK7TRF. (Photo courtesy of Ben VK7BEN.)

different aspects of Science, Technology, Engineering, Arts and Maths (STEAM). The festival was well organized by the University of Tasmania.

The Saturday was open to the public and with Salamanca Market a short distance away there was a constant stream of adults and children who loved talking over light, writing their name in Morse code, typing to each other on the RF connected terminals and talking with our amateur radio operators.

The Radio and Electronics Association of Southern Tasmania Inc (REAST) committee nominated to have a stand a couple of months prior to the event. Following discussion and taking into account what appeared to be popular at last year's event, we decided to create hands-on activities that students and the public could participate in. This could demonstrate and link STEAM elements through the medium of amateur radio.

The Friday was a challenge with a new group of ten students appearing at the stand every 10 minutes. We were able to engage with the students by demonstrating optical, microwave and UHF communications using phone, tone and keyboard. There was an SDR receiver pumping out TripleJ to demonstrate software defined radio and Arduino based Morse code decoders attached to a Morse key to allow people to see how the tones translated to letters and numbers. Throughout the day we managed to place a Schools Amateur Radio Club information pack in many Teachers' hands and were able to engage with many of the teachers.

STEAM is a learning approach that actively attempts to link Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student inquiry, dialogue and critical thinking. The end results are students who take thoughtful risks, engage in experiential learning, persist in problem-solving, embrace collaboration and work through the creative process. These are the innovators, educators, leaders and learners of the 21st century (3).

Activities

Our main hands-on activities included:

Two Arduino based Morse code decoders

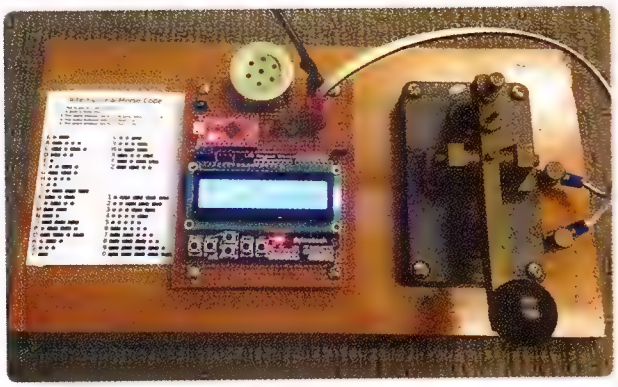


Photo 3: Arduino Morse code decoders. (Photo courtesy of Justin VK7TW.)

Two short distance Optical Transceivers – WALL-E 1 and 2

Photo 4: WALL-E 1 – Optical Transceivers. (Photo courtesy of Justin VK7TW.)

Two long distance Optical Transceivers

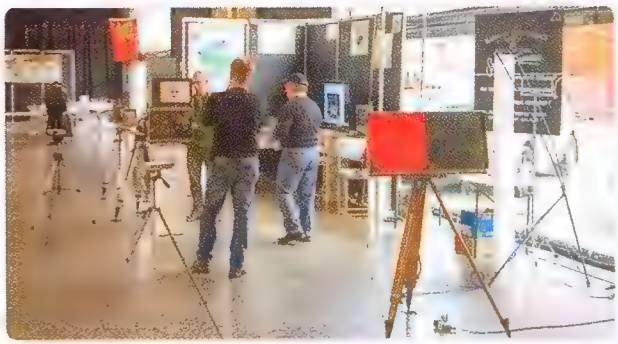


Photo 5: Long distance optical transceivers. (Photo courtesy of Ben VK7BEN.)

Two RaspberryPi based RF connected terminals using LIPD transceivers for keyboard to keyboard

Photo 6: RF connected terminals. (Photo courtesy of Justin VK7TW.)

Two 10 GHz Gunn diode based microwave transceivers

Photo 7: 10 GHz microwave transceivers. (Photo courtesy of Justin VK7TW.)

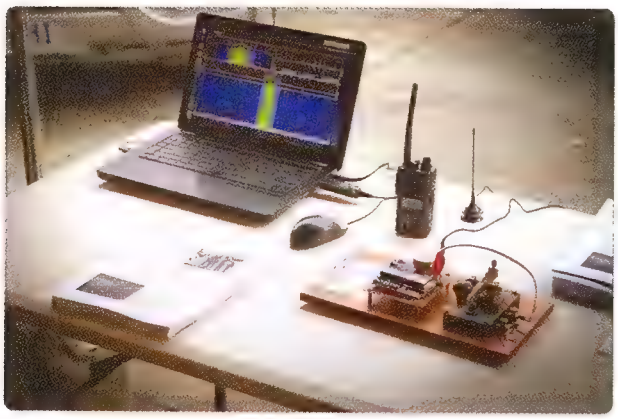


Photo 8: RTL SDR receiver. Skywave Linux notebook with RTL DVB-T USB radio receiver using CubicSDR – this radio was tuned to Triple J – the station of the school kid's generation. (Photo courtesy of Ben VK7BEN.)

A video tour of the stand can be found at: *https://youtu.be/NnR_NFJITTc*

The paper information packs included:

- Schools Amateur Radio Club articles from *Amateur Radio* magazine (three articles) Teacher Pack (thanks to Joe VK3YSP, Julie VK3FOWL and Peter VK3PF);
- Amateur radio outline and REAST club details;
- Morse and Secret Codes sheet; and
- Business Cards with Facebook and Web site addresses.

During Friday at least one of the stand volunteers endeavoured to put a teacher information pack into the hands of the teacher or supervising adult and engage with them whilst the students were playing with the various activities on the stand.

There was also a large TV display that cycled through the many aspects of amateur radio. This was a PowerPoint presentation of 32 slides showing the many aspects of the hobby with a local flavour and every fourth slide included the club details. This presentation took around 5 minutes to loop and ran the whole time.

Linking the everyday to the science, technology, engineering, arts and/or mathematics behind it was a key element that worked well. Many kids and adults do not realise that the mobile phone in their pocket is a radio and it uses electromagnetic radio waves to work. The optical communication was a great example where the visible electromagnetic spectrum is used to superimpose your voice on the red light from an LED.

The kids could see the red LED light varying from the optical transceivers and when someone stood in front of the beam the voices stopped so there was good cause and effect. The kids could align the short range optical transceivers and get them to squeal which was a good feedback mechanism and the kids rapidly understood what to do.

I wish I had a camera ready to capture the look of amazement when the kids (and adults) heard their friend or Mum/Dad talking over red light bounced off the pavilion's white painted wall. Someone would then explain in simple terms that their voice sound waves are converted to electrical signals that vary the level of the red light that travels to the wall and back to the other box where the reverse happens and you can hear their voice in the speaker.

What worked well?

Linking the everyday to the science and technology like the child's smart phones using radio and showing them a radio spectrum chart and where the mobile phones operate.

Pointing out where WIFI and LIPD is in the spectrum and then pointing to the RaspberryPi Terminals and saying they are using the same spectrum as your car remote key locking system.

Minimal deep technical information – presenting the science through metaphor and/or analogy – e.g. Optical communications uses the same technology as your TV remote control!

Cause and effect science demonstration with linkage to the relevant STEAM discipline through optical, microwave and UHF electromagnetic spectrum.

Stepping in to the optical or microwave beam stops the signal from getting through – demonstrating a line of sight electromagnetic spectrum mode.

Our portable optical transceivers were nicknamed WALL-E 1 and 2 which resonated with some kids, the volunteers showed them what to do and then the kids took over providing them with control to get the experiment working.

The Morse code decoders provided a challenge that the kids had to step up to. After the volunteers described how Morse code worked with dots and dashes the kids could look at the chart and tried it themselves. Most kids knew what SOS stood for and so this was the easy starting point for the child to key out SOS then move to something more challenging, like their name.

Having easy to understand pictures and stories that explain what visitors were looking at and/or the process that is happening – the optical transceivers had

a sign showing the light spectrum and where the red light was in the spectrum along with details of the world record set in 2005 in Tasmania.

Challenges and Learnings

Equipment needs to work first time and every time – on the schools day you do not have time to fix things. As an example the 10 GHz Gunn diode transceivers were not stable in a large non-air conditioned pavilion! The large optical transceivers only worked one way and we were near large windows with the sun being an issue during the day.

Equipment needs to be easy and intuitive to use, for both students and volunteers. There needs to be a minimum of knobs and switches that kids can play with.

There may need to be training provided to the volunteers to bring them up to speed on how to operate the equipment for the schools and public days.

It would be great to have some women on the stand to provide gender balance and demonstrate that amateur radio (and science) can appeal to both men and women.

There needed to be more signage to link the STEAM principles to the equipment and provide prompts for the volunteers and Master of Ceremonies.

Basic scripts could be developed to ensure consistent and focused messages by all volunteers about what aspects of STEAM are being demonstrated with the particular piece of equipment.

Will we be back next year?

You're damn right – it was great fun and we have been able to use this great hobby of ours to demonstrate to young minds the application of STEAM principles through the hobby and use the hobby as a platform to engage with young and not so young kids!

The next critical step is to investigate how we can better integrate and supplement school's science, technology, engineering, arts and mathematics curriculum to guide student inquiry, facilitate the dialogue, and encourage critical thinking using our hobby.

A huge thank you to all club members who put many hours into preparation for the event and on the stand during the event.

73

Justin VK7TW

References

1. *https://www.facebook.com/fobitas/*
2. *https://www.facebook.com/natsciwktas/*
3. *http://educationcloset.com/steam/*what-is-steam/

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial amateur radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft. AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly net

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 0930 Z or 1030 Z depending on daylight saving. Check-in starts 10 minutes prior to the start time. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales
VK2RBM Blue Mountains repeater on 147.050 MHz

In Queensland
VK4RIL Laidley repeater on 147.700 MHz
VK4RRC Redcliffe 146.925 MHz IRLP node 6404, EchoLink node 44666

In South Australia
VK5TRM, Loxton on 147.175 MHz
VK5RSC, Mt Terrible on 439.825 MHz IRLP node 6278, EchoLink node 399996

In Tasmania
VK7RTV Gawler 6 metre repeater 53.775 MHz IRLP node 6124
VK7RTV Gawler 2 metre repeater 146.775 MHz IRLP node 6616

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT or VK3JED conferences. Past experience has shown that the VK3JED server offers clearer audio. The net is also available via IRLP reflector number 9558. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email. Frequencies and nodes can change without much notice. Details are put on the AMSAT-VK group site.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night. Currently only SO-50 is available.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

VK5news Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

Unfortunately the planned visit to the Army Motor Museum did not happen because there were not enough takers. I am sure those that did want to go would have found it very interesting and maybe they will go out there independently.

Fusion Communication

The speakers we had instead were most interesting. Peter VK5FP and his group introduced us to the Fusion system of communication via special repeaters. This is a project sponsored by Yaesu and involves the use of HF, VHF and UHF. It also allows either digital or analogue modes because the system uses "trans codes" which actually 'translates' between the two modes within the repeater.

Currently there are five repeaters within VK5 but more are planned. Messages can be repeated in voice or text modes. There is an APRS mode for those participating in that system. There is a GPS section within the repeater that can be used to guide you or for others to find you.

From our meeting hall, Peter had several contacts with VK5 amateurs he had previously arranged and one with an amateur in Texas which was heard by several others listening to the repeater being used. There are 41 nodes across the US.

The UHF and VHF rigs are hand held or mobile models and have a screen on which text can be written or received. The cost is similar to the cost of the D-STAR units.

This definitely is a new idea and an interesting one; especially if VK land develops a group of repeater hunters such as have been around in the US for many years.

WIA AGM for 2017 will be in South Australia

The date is 20/21 May 2017.

The possibility of the WIA's AGM being in VK5 was presented at the official dinner on the Norfolk Island but the actual details have now been accepted by the Federal Committee.

The main venue will be in the hills town of Hahndorf where there are a number of different types of accommodation including good quality hotels and caravan parks. Plans are being made for the various activities and ALARA is arranging arrangements for the partner's tours.

More information will be posted as the time approaches.

Photo 1: AHARS Lunch.

AHARS Buy and Sell

This is to be held in the Goodwood community Hall on 6 November 2016. Tables can be ordered through Roy VK5NRG or David VK5KC.

Vendors can start setting up shortly after 7 o'clock and the main doors will be opened at 9 am with the selling room open at 9.30 am. Last year the weather was marvellous; let's hope this year is as good. As usual ALARA will have bacon and egg sandwiches for breakfast and other food and drinks during the day and NERCs will be arranging a BBQ so there will be no lack of food.

Come along and meet all your friends.

A most amazing casual luncheon

Every second and fourth Friday of the month some AHARS members meet for a casual lunch at the Blackwood RSL. On Friday 26 August 2016, they just kept coming and coming. Tables were added at the end of the original four tables and eventually a second table had to be used. 25 OMs and 5 YLs were fed there that day. A truly amazing number as the photo shows.

AHARS Christmas Dinner

We are already gathering names for this. The date is 18 December 2016. The venue is the Aldgate Hotel as it was last year.

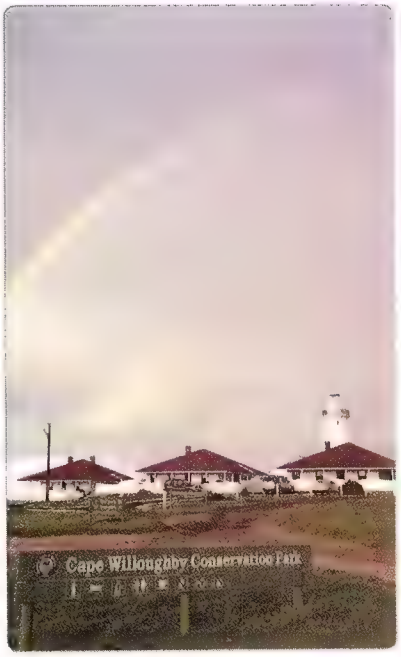

Photo 2: A rainbow over Cape Willoughby.

Report from Cape Willoughby

Very succinctly, here are some stats:

- total 547 QSOs
- bands used: 160 m, 80 m, 40 m, 30 m, 20 m, and 2 m.
- Modes used: SSB, PSK31, JT65, CW.
- 36 different countries worked.
- 61 QSOs with other lighthouses (of those 57 were in Australia, three in New Zealand, and one in Scotland)

Operators were:

- myself VK5PAS
- Chris VK4FR/5
- Andrew VK5CV
- John VK5EMI
- Michael VK5FVSV

Cape Willoughby lighthouse is located within the Cape Willoughby Conservation Park 5CP-033 (for the VK5 Parks Award) and VKFF-1014 (for the World Wide Flora Fauna program). Kangaroo Island is OC-139 for the Islands on the Air (IOTA) program.

Thanks Paul.

73

Christine VK5CTY

Photo 3: Sunrise at Cape Willoughby.

Photo 4: Chris VK4FR and Paul VK5PAS at the operating position.

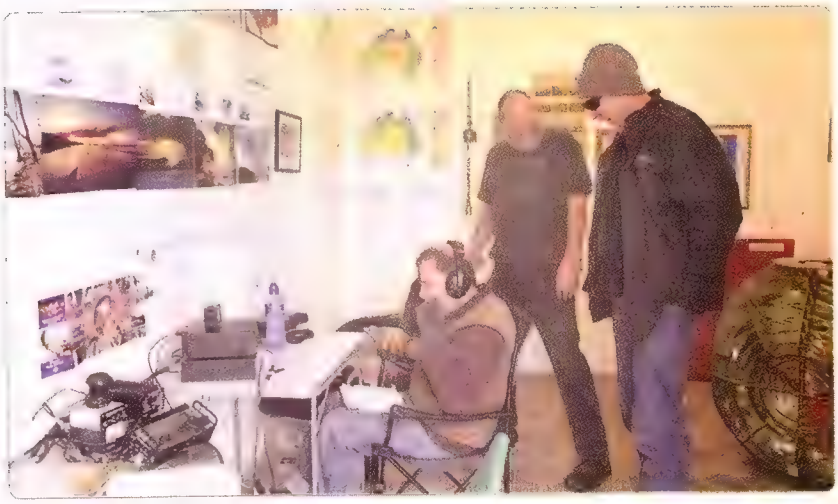

Photo 5: John VK5EMI being watched by visitors.

DX Awards

Marc Hillman VK3OHM

The WIA Awards Committee wishes to resurrect an Awards column. Such a column has not been published for several years, as the magazine had no contributor. Publications Committee welcomes the new contribution, which we trust will become a regular contribution.

Below are listed all new awards issued in August 2016, plus all updates to DXCC awards. Go to *http://www.wia.org.au/members/wiadxawards/about/* to use the online award system.

New awards

The Awards listed below are Awards which have been granted for the first (and possibly only) time. The DXCC awards will appear in the online DXCC Standings, but the other awards (e.g. Antarctic, Gridsquare, Worked All VK Call Areas, Worked All States, etc) are not displayed on the website. Congratulations to all recipients.

DXCC Multi-band (1)

#	Call	Name	Mode	Band	Count
141	VK8GM	Gregory Mair	Open	20m	151
142	VK8GM	Gregory Mair	Phone	20m	119

DXCC Multi-band (3)

#	Call	Name	Mode	Band	Count
95	VK3OHM	Marc Hillman	Open	20-15-10m	449
96	OH8LXT	Veikko Pennala	Phone	20-17-15m	326

DXCC Multi-band (5)

#	Call	Name	Mode	Band	Count
64	OH8LXT	Veikko Pennala	CW	20-17-15-12-10m	685
65	OH8LXT	Veikko Pennala	Open	20-17-15-12-10m	1102
66	OH8LXT	Veikko Pennala	Digital	20-17-15-12-10m	827

DXCC Multi-mode (CW)

#	Call	Name	Count
244	OH8LXT	Veikko Pennala	252

DXCC Multi-mode (Digital)

#	Call	Name	Count
54	OH8LXT	Veikko Pennala	267

DXCC Multi-mode (Open)

#	Call	Name	Count
439	OH8LXT	Veikko Pennala	307

DXCC Multi-mode (Phone)

#	Call	Name	Count
613	OH8LXT	Veikko Pennala	212

Grid Square

#	Call	Name	Mode	Band
246	VK5BC	Brian Cleland	Open	HF
247	VK5BC	Brian Cleland	Open	6m
248	VK5BC	Brian Cleland	Phone	HF
249	VK5BC	Brian Cleland	Phone	6m
250	VK5BC	Brian Cleland	CW	HF
251	VK5BC	Brian Cleland	Digital	HF
252	OH8LXT	Veikko Pennala	Digital	HF
253	OH8LXT	Veikko Pennala	CW	HF
254	OH8LXT	Veikko Pennala	Phone	HF

Norfolk Island

#	Call	Name
26	VK4SIR	Peter Mackaway

Help wanted: Trying to ID old radio

(maybe 70s Australian Army transmission?)

Can anyone assist? A correspondent is trying to identify this old radio before stripping it and using it as a case for a speaker.

What is known:

- It was made by "Waldon" H.F. Equipment Serial No 349 Type V4N
- It was made in Myrniong, Vic
- It has two silver switches (standby/transmit) and (on/off).
- One volume dial
- No tuner dial!

Inside the box are old tubes that are mostly made in Australia, around the 70s (eg Miniwatt). We searched some of the old tubes up and they appear to be TV parts rather than radio parts?

Do you have any idea what this is? We cannot find any information online at all about this company or manufacturer.

Any assistance you could provide would be extremely useful.

Contact Amanda Ward *amandaward909@gmail.com*

DXCC updates

The lists below contain updates to the various DXCC Awards during August.

DXCC Multi-band (1)

#	Call	Name	Mode	Band	Count
43	VK7CW	Steven Salvia	CW	20m	263
83	VK6APK	Aleksandar Petkovic	CW	30m	200
54	VK3EW	David McAulay	Digital	20m	163
89	VK3OHM	Marc Hillman	Digital	20m	120
140	VK6XT	Richard Hill	Digital	20m	102
1	VK3OHM	Marc Hillman	Open	20m	190
41	VK7CW	Steven Salvia	Open	20m	302
58	VK6SMK	Steven Koncz	Open	20m	146
61	VK4CC	Colin Clark	Open	20m	222
80	VK2NN	Peter Garoufalis	Open	20m	153
87	VK6XT	Richard Hill	Open	20m	135
42	VK7CW	Steven Salvia	Phone	20m	261
56	VK3OHM	Marc Hillman	Phone	20m	154
71	VK6SMK	Steven Koncz	Phone	20m	122
114	VK2NN	Peter Garoufalis	Phone	20m	129

DXCC Multi-band (3)

#	Call	Name	Mode	Band	Count
24	VK3EW	David McAulay	CW	30-20-17m	846
37	VK7CW	Steven Salvia	CW	30-20-17m	714
66	VK3EW	David McAulay	Digital	30-20-15m	411
36	VK7CW	Steven Salvia	Open	20-17-15m	761
72	VK7CW	Steven Salvia	Phone	20-15-10m	497

DXCC Multi-band (5)

#	Call	Name	Mode	Band	Count
21	VK3EW	David McAulay	CW	40-30-20-17-12m	1310
35	VK7CW	Steven Salvia	CW	30-20-17-15-12m	1083
34	VK7CW	Steven Salvia	Open	30-20-17-15-10m	1170

DXCC Multi-band (7)

#	Call	Name	Mode	Band	Count
10	VK3EW	David McAulay	CW	160-40-30-20-17-15-12m	1676
14	VK7CW	Steven Salvia	CW	40-30-20-17-15-12-10m	1423
15	VK7CW	Steven Salvia	Open	40-30-20-17-15-12-10m	1522

DXCC Multi-band (9)

#	Call	Name	Mode	Band	Count
12	VK3EW	David McAulay	CW	160-80-40-30-20-17-15-12-10m	1977

DXCC Multi-mode (CW)

#	Call	Name	Count
225	VK4CC	Colin Clark	169
232	VK6SMK	Steven Koncz	120

DXCC Multi-mode (Digital)

#	Call	Name	Count
20	VK3EW	David McAulay	262
31	VK6XT	Richard Hill	134
33	VK7CW	Steven Salvia	119

DXCC Multi-mode (Open)

#	Call	Name	Count
62	VK4CC	Colin Clark	269
386	VK6XT	Richard Hill	198
399	VK6SMK	Steven Koncz	167
409	VK2NN	Peter Garoufalis	193

DXCC Multi-mode (Phone)

#	Call	Name	Count
586	VK7CW	Steven Salvia	281
589	VK6SMK	Steven Koncz	140
591	VK4CC	Colin Clark	204
594	VK2NN	Peter Garoufalis	165
606	VK6XT	Richard Hill	113

Participate

The Rosebud RadioFest. SPARC

20 November 2016

Over to you

September *AR*

Congratulations on the September *AR*.

Every page was interesting. I found the article on HF Digital Voice very interesting though frustrating in the lack of factual data about performance. This is certainly not a criticism of the author because everyone seems to suffer from the same problem of not having a ready to hand method of assessing signal and noise strengths.

I am experimenting at the moment with Near Vertical Incidence Skywave modes and it is frustratingly difficult to get meaningful reports because of the errors in most amateur radio SWR meters said to be accurate around S9 but nowhere else. Are the only reliable reports are those from SDR receivers where it might be expected that if you get an S6 (6.3 uV) report it means just that and not S1 (0.2 uV) or S8 (25.1 uV)? It would be nice if radio amateurs could develop some protocols to give a more scientific basis to reports on antenna and mode performances. An Arduino or such digital software S meter giving accurate reports would also be very handy.

However these factors aside the article is very stimulating. I am very tempted to splurge on a SM1000 rev F when I finish my present experiments.

Liked the article on Tony Hutchinson – one of nature's gentlemen.

Thanks again.

Regards,

Ken Fuller VK4KF.

ALARA

Christine Taylor VK5CTY – Publicity Officer

ALARA Contest Report

We have gone back to the standard 24 hour formula instead of the longer one we have used in previous years. We are able to use EchoLink this year as we have for several years. This is a good way to allow those who have no HF rigs to participate fully. This year we have added 2 m to the bands allowed. Again this is to encourage the newer YLs to take part. Usually it is a 2 m handheld that is the first radio we use after passing our exam. Let us hope there are lots of new logs, though I expect we will hear some of the usual serious contesters, as well.

The number of participants has been falling for a while although the addition of 2 m as well as EchoLink may make a difference.

By the end of the Contest it was clear that EchoLink was being used to identify where on the HF bands people were operating so more contacts could be made. There were several DX stations who joined EchoLink which I don't think has happened before.

Logging as you go

Our Contest Manager Diane has offered us a logging program to save having to transfer a paper log to the computer after the contest. It is very possible we have had fewer logs sent in in previous years to the Contest Manager simply because of the chore of transferring all the information. Remember, you are really only in the Contest if you send in your log!

We long-time members are not familiar with the jargon of a logging program that allows ALARA members to give the log information simply as 59A or 56A with no numbers. I can see that it would be simpler but the information all came too close to the Contest date for us to become familiar with it. I hope our new Contest Manager is right about the ease with which she will be able to untangle all the different formats when she gets our logs.

For those who did not user a log this year but would like to use one next year, go to *www.vkcl.com.au* to download the program as it is set up for the ALARA Contest.

Regular luncheons in VK5 and VK3

These continue and are well attended. They are a great way to keep in touch with your friends. Both luncheons have new people attending from time to time which is excellent. VK6 also has a fairly regular lunch but we don't hear too much about them. We would like to know what you are doing, girls!

Monday Night Nets

The idea of having some of these nets on EchoLink has proved to be a good one. There are usually more people on EchoLink than there are on the 80 metre nights. It is good to see some of the F calls there, too. This is a great way to see how we run the nets and to hear the topics discussed.

Sponsorships

Having an YL whom you sponsor in another country is a special hand of friendship across the world. We get to hear what is happening in other YL organisations, exchange newsletters and personal letters. It is not expensive and certainly it is interesting. Ask your State Rep about it or contact Shirley VK5YL who is our Sponsorship Secretary. The contact details are in each newsletter.

VK3 News

Goodbye Winter and Hello Spring. It has been a very long cold wet and very windy winter; we welcome some nice warm and sunny weather.

What has being going on in the VK3?

On 11 July 2016 I arranged a Christmas in July but it came to pass that we had four birthdays that month: the first one was Charlie VK3ZD on 4 July, then came Colin VK3PN on 11 July, my mum Elsie who turned 92 on 13 July and the last but not least was Kaye VK3FKDW on 14 July.

So, not Xmas but Birthdays in July!

We celebrated at the RSL in Glen Waverley with two Birthday cakes and it was a great night enjoyed by all.

Our next ALARA lunch is to be held on 24 September 2016 at the Grand Hotel in Warrandyte being organised by Judy VK3FJAG.

We also have a catch up dinner with friends on some Friday nights from time to time at the RSL in Glen Waverley.

I would like to thank all the contacts that I made in the ALARA Contest and would like to wish good luck to all the winners.

Well, we now know that my OM John VK3DQ has, at long, long last, been told he has Forestiers Disease which affects the discs and ligaments in his spine but, with new medication, he is looking a lot better than he did six months ago.

We are off to Shepparton on Friday 9 September 2016 for the Hamfest with Kaye VK3FKDW and her partner Denis VK3BGS.

We are all looking forward to our cruise in November to the South Pacific Islands.

I would like to wish everybody a very Merry Christmas and a safe, happy New Year.

Cheers Jean VK3VIP

Contests

Trent Sampson VK4TS
e *vk4ts@wia.org.au*

Contest priorities for October

Contest	Date (UTC)	Rules	Difficulty	Software	Modes
Oceania SSB	1st October	*www.oceaniadxcontest.com*	Easy Fun	N1MM/TR4W/ VKCL	SSB
Oceania CW	7th October	As above	Easy Fun	N1MM/VKCL	CW
QRP 40M Sprint	23rd October	*www.vkqrpclub.org*	Easy Fun	ANY	CW/PSK/SSB
CQWW DX	29/30 October	*www.cqww.com*	Easy Tough	N1MM/TR4W/ VKCL	SSB

Oceania DX Contest - Some ideas on entering the contest.

This one is different - You are the hunted - the world looks for VKs - the pileups are bigger, the action is faster and essentially you will not stop for the entire 24 hours.

Main tips are that despite it being a QSO chase, band points means that band changing is very important. Try to be as close to the MUF as possible to enhance the runs.

All prefixes are multipliers on each band so they tend not to dry up - even at the end of the contest new prefixes will be gems in the log.

Personally I prefer to aim USA as much as possible as they are a rich source of prefixes but at the same time not ignoring peaks to other areas.

CQWW DX SSB: The Daddy of them All

If you have never tried this contest, it is the big one - typically over 60,000 different callsigns are on for the weekend - Every band 160-10 m has activity and for the DXers there is always a glut of new countries and zones.

We try to target DXCC on our prime bands as motivation and keep an eye on the run rate to decide on band change opportunities.

Having a second radio is very handy to help decide change time.

	Cost	Keyer	Networking	PSK/RTTY	Interface	CW Decode
VKCL	Free	No*	Yes	NIL	Omni Rig	No
SD Logger	Charge **	No	?	NIL	?	No
N1MM	Free	Yes	Yes	MMTTY	Inbuilt	Yes
TR4W	Free	Yes	Yes	MMTTY	Inbuilt	No
Writelog	Charge	Yes	Yes	MMTTY	Inbuilt	Yes
WinTest	Charge	Yes	Yes	MMTTY	Inbuilt	No

Depending on the category you are entering, cluster use helps choose options, but expect it to be overflowing with information. Prepare to filter out unwanted spots.

Contesters Tricks

The Software: Until you have hooked up a PC to the radio you have not had as much fun as you can with a radio.

Frequency control opens a whole gamut of interesting implications - Spots from DX Summit feeding your software with point and click to DX Callsigns - Automatic rotator control - Voice or CW Keying the PC and software has taken the hobby to another level.

The main Software packages used in Australia are VKCL, SD Logger, N1MM, TR4W and Writelog. See Table above.

* VKCL has several compatible alternatives to hard coded keyers.

** SD Logger has a free RD Contest version - Thank you EI5DI.

Next Month we will look at N1MM Plus in depth.

This month we asked the questions of one of the Masters of the Australian Contest scene.

Contester of the Month VK7GN

Martin VK7GN who, through this call and his two previous calls VK5GN and VK4VU, dominates the all-time records from Australia.

Photo 1: Martin VK7GN.

For the VK5s who bemoan how everyone has better propagation, the all-time records in both the CQWPX and CQWW Contests were set from VK5GN. Martin has the top four highest finishes in the CQWW Single Op all band Category - three as VK5GN and one as VK4VU.

What is your favourite Contest?

In the distant past it was WPX until they changed the rules on time on for single op. Under the old rules it was realistically possible to compete on the world stage, after the change it wasn't! I have fun in most contests even if I can only get on for a short time I still set goals and targets for Qs or multis. Country contests like the SP (Polish) are great fun to try and work all the multipliers.

What is your favourite Rig?

Currently my best rig is the Ten Tec Orion; great receiver and not too fiddly to use. Really for contests it is not necessary to have the latest expensive radios. Some of the mid-range radios like Kenwood TS-590 have plenty of capability. You need something with a "bullet proof" front end. (Consult Sherwood Engineering on the net.) Tx should be as clean as possible; harder to achieve in modern radios.

What modes do you contest in?

Any! I was Phone only then got on with some RTTY. However, once I re-learned CW I now find that mode is the one I enjoy the most. I'm still better at phone than CW but part of the fun is the challenge of getting better.

What is your favourite contest band and why?

Depends on the contest, what antennas I have available and conditions. If 10 m is open then it is easier to get a frequency with less QRM. However, with the sun going into hibernation 10 m will soon be a fond memory! For an all band effort I was always taught to start on the highest band that you can get a run and then gradually go down as the bands change – not entirely true but a reasonable guide.

What is your preferred Contesting Software?

For CW I prefer TR or now TR4WIN. N1MM is close behind but not quite as smooth to use. My advice is to get proficient with all the current range of contest log programmes, then if you get a chance to join a multi op you are not the nuisance that needs special logging provisions!

What is your preferred Mic and Key?

All the Heil audio stuff is good but the HC4 mic insert is still, in my opinion, the best for contesting. For a key I use either the Schurr Profi paddle or the Kent Paddle. The Kent is more robust for when I am portable but the Profi is a better key. I use the Logikeyer with the paddle even when using the Winkeyer for computer keying. I still prefer the Logikeyer, I just like the way it does auto-spacing.

What is your "not so secret" weapon?

BIC – bum in chair! A lot of contests are won by the operator that stays in the chair and operates when the bands are lousy and "rate" gets down to less than 10 per hour. Tempting to go and do something else! Suppose in that time away from the rig you would have worked a rare multiplier – at the end of the contest that represents hundreds or thousands of extra points!

My best yarn is of an ARRL contest many years ago. The conditions were terrible all weekend; almost impossible to get a run going anywhere. I just plugged away trying to get as many multis as possible. Then suddenly on Monday morning 10 opened up brilliantly. I just ran and ran 'til the end of the contest. Over 60% of my total Qs were on that Monday morning. I got a great result as many other people just got fed up with the lousy conditions and had given up!

What is your best tip to a newbie contester?

Learn to do the basics well. Learn to run a pile up at over 100 QSOs per hour and keep it up over a few hours. Learn to S&P and maintain rate close to 50 per hour (more is better of course!). Learn how to project your voice using the cleanest transmitted audio. If you want to win then you have to practice the basics and keep up your skills, just like any other sport!

Don't try to run before you can walk! There are far too many incompetent operators currently trying to use two radios. I don't appreciate their slowing me down

Photo 2: Linda VK7QP in the Remote Shack.

by not being there when I return to their call.

Pick the brains of the old hands. They are not always right but there is usually something worth knowing in what they say. Just because you can talk doesn't mean you are a good phone op!

Who is VK7GN?

I have been contesting since the mid-1960s: originally as G3VBX then GW3VBX at University in Wales, emigration to Australia in 1971 converted me to VK4VU, followed by VK5GN and now VK7GN. That covers a lot of sunspot maximum and minimums! I have had big antennas and little antennas. Some of my best scores were from VK4 using a 2-el quad at 30 ft (9.1 m) and an 18AVT trap vertical. Location is important!

Having decided now was the time to downsize our main house we moved to Bellerive in suburban Hobart. The electrical noise is appalling and the chances of permission to put up anything useful in the way of antennas, unlikely! I am now developing a remote station just north of New Norfolk in the hills. I am getting too old for big towers so will stick with beams at low heights and verticals. It is quiet electrically so I want to get on the low bands 160 m and 80 m. For the next few years 40 m will be the main band but the QRM especially into Europe will be prohibitive. I will still have fun and I will still be contesting long after I should have been put out to pasture, Hi!

Martin VK7GN

Contest Terms

Run = Call CQ and stay on the same frequency.

Search and Pounce = Tune across bands looking for stations calling CQ.

Multiplier= a station that increases your score owing to contest rules Multi - Short for Multiple operator or transmitter.

VK4TS Trent is the admin of VK Contest Club (VKCC) web *(www.vkcc.com)* and Facebook pages and has been an active contester since the 1970s.

Emails can be sent to *vk4ts@wia.org.au*

73

Trent Sampson VK4TS

Participate

AHARS Hamfest 6 November 2016

Keith Roget Memorial National Parks Award 11-14 November 2016

Remembrance Day Contest 2016

Alan Shannon VK4SN

STATE	LOGS	LOGGED CNCTS	PH	CW	Raw Score	Weighted Score	Unique Ops
VK 1	6	937	937	0	1055	2.76	22
VK 2	48	8747	7495	1252	12346	3.08	260
VK 3	35	4594	4361	233	6045	1.52	210
VK 4	17	2923	2749	166	3937	1.46	125
VK 5	26	4563	4382	181	5645	3.98	125
VK 6	46	5193	5189	4	6844	5.23	110
VK 7	18	2710	2501	209	4014	6.87	70
VK 8	0	0	0	0	0	0.00	4
ZL	2	48	48	0	48	0.01	35
P2	0	0	0	0	0	0.00	0
TOTAL:	**198**	**29715**	**27662**	**2045**	**39934**		**961**

Table 1

The Remembrance Day Contest 2016 was the latest version of a contest that has been around for over 70 years. Each year State vs. State battle it out on the bands to see which state can lay claim to the most radio active, and this year the VK7s proved they were worthy of the title. Tasmania has won the 2016 Remembrance Day Contest. The challenge from VK6 proved to be little more than a whimper although some booming signals came out of the West! VK6POP Bob with his new 2 element 40 m delta loop was like a beacon and the Sandgropers Team (VK6ZRW, VK6QS and VK6AXB) grabbing first place in the teams category certainly show that VK6 were gearing up for a chase for the title. But full credit must go to Tasmania the VK7 effort lead by VK7OO and a host of other operators show what can happen when a team pulls together. A noticeable decline in logs and operators may be due to the preparation for the ILLW that followed on the following weekend. No doubt extra activity is about when the weekend is shared. Estimations see about 150 less stations on air, but phone contacts and phone logs increased by 5000 and 17 respectively.

CW activity went down to 14:1 from 7:1 SSB/CW. Out of 198 logs, there were 2045 logged CW contacts compared to 3167 last year. Logs were received from 13 Foundation, 19 Standard and 166 Advanced licences, making up 21% of actual participants. Nine paper logs and 189 electronic logs were received. Of these, two were treated as check logs due to missing information. 137 logs contained HF contacts only, 55 contained HF, VHF and UHF contacts, and six VHF and above logs were received. No logs were received from VK8 or P2.

Comparing results for each state can be done using table 1 above.

This year showed no new surprises in scores, but credit must go to VK2AU in the Multi-Single category with 1175 points, 27 points ahead of VK2GGC's record from 2012. VK2AU Operators VK2PR, VK2KDP and VK2ND were the only ones to set a new record in 2016.

72 operators were spread over 11 Multi-Single and four Multi-Multi stations. The QRP section was represented by 15 log submissions which is five down on last year. Poor conditions will make it harder for QRP stations to be heard during low sunspot activity.

Although there is no Rookie category (i.e. first year as an amateur), VKHAM (.com) has kindly sponsored an award for the highest scoring Rookie. Congratulations to VK6FBJW with 267 points in the Single Op Phone section. The top three Foundation licences were VK6FBJW with 267 points (SOPH), VK6FMON 226 points (QPR PH), and VK2FAIB 144 points (SO PH).

Four teams were submitted with team Sand Gropers (VK6ZRW VK6QS VK6AXB) taking the lead with 1315 points. Table 2 has all the

VK2EFM's 1945 WS122

TEAM NAME	CALLSIGN	SCORE	CALLSIGN	SCORE	CALLSIGN	SCORE	TOTAL
Sand Gropers	VK6ZRW	682	VK6QS	150	VK6AXB	483	1315
AREG Mostly Harmless	VK5MTM	300	VK5GR	664	VK5AKH	294	1258
NSW Wombats	VK2GR	508	VK2BJ	478	VK2PN	178	1164
Waverley ARS	VK2BV	150	VK2VEL	102	VK2KZ		252

Table 2

results.

Jude VK2EFM got in the mood using a 1945, 2 to 8 MHz WS122. Operating on 80 and 40 m only with 15 W of AM, Jude said *"Effective SSB Power was under 3.75 W (more like 2 W)!"*

Logging software versions varied from early versions to the latest releases. Please make sure you have the latest software as early versions are not up to speed with scoring and other changes. Please DO NOT make changes to the header except for the Soapbox comments. Changes and deletions made by the user only increases workload having to correct headers so the log is accepted. 2017 will see the first available upload to the computerised log checking system. Logs that do not conform to the latest formats will be rejected until corrected and reloaded. I had to make many corrections to log headers for testing the new computerised system. The software writers have spent many hours so the output conforms to Cabrillo format. VKCL and RD Logger have already been tested and passed with flying colours. Some multi-multi stations prefer to use N1MM as it allows full network integration, CW and RTTY sending and receiving, automated CQing and voice keying and automated callsign entry in the logging window when clicking on a callsign while in CW or RTTY windows. Preliminary testing was done this year and finalisation of the User Defined software will be completed ready for next year. Thanks to those assisting with the project: KJ4IZQ, G4OGB and the N1MM guys, VK4TS and VK4SN.

2016 Remembrance Day Contest Results

SINGLE OP PHONE								QRP PHONE	
Callsign	Points	Callsign	Points	Callsign	Points	Callsign	Points	Callsign	Points
VK2MT	926	VK3AV	157	VK3FLCS	62	VK6LDX	8	VK5WTF	313
VK3SIM	833	VK6QS	150	VK3NCC	60	VK6PAW	7	VK6FMON	226
VK7OO	688	VK2KTT	147	VK6DF	60	VK6MMB	6	VK5FTCT	143
VK6ZRW	682	VK3KTO	147	VK3ASU	59	VK2HFF	5	VK6FLAB	127
VK1HW	641	VK2MK	146	VK6CG	55	VK5GP	5	VK2EJW	124
VK2HBG	616	VK2FAIB	144	VK4MON	54	VK6XL	5	VK7NTK	82
VK5CB	561	VK6TKR	139	VK3DY	53	VK6AS	3	VK7TW	51
VK3XV	526	VK5HEL	135	VK3YYR	52	SINGLE OP CW		VK3YE	44
VK6AXB	483	VK4FAAS	134	VK2EFM	51	Callsign	Points	VK2FENG	43
VK7ZMS	482	VK2NP	133	VK2JCC	50	VK2GR	508	VK3TWO	25
VK3AVV	440	VK5KX	133	VK2AEJ	49	VK2BJ	478	VK3FDAP	12
VK3BL	431	VK6MM	133	VK5NEX	48	VK2KJJ	246		
VK2BGL	428	VK6YD	133	VK6AG	45	VK2PN	220	QRP MIXED	
VK5PAS	426	VK3GWG	130	VK7ZCR	45	VK2WQ	215	Callsign	Points
VK6CSW	419	VK7RM	125	VK6BMW	43	VK3QB	210	VK2IO	573
VK7HW	415	VK3FADM	123	VK3WMM	41	VK7CW	178	VK3GK	88
VK5DT	412	VK3ADW	118	VK6SN	37	VK2AYD	166		
VK7ZBX	402	VK6JP	117	VK5MK	35	VK7RF	166	MULTI-SINGLE	
VK7VH	382	VK2DEK	116	VK3JWT	35	VK2EL	148	Callsign	Points
VK3GC	373	VK3ANL	114	VK6KFD	34	VK3CTM	116	VK2AU	1175
VK5QI	365	VK7QP	114	VK6GD	29			VK2GGC	909
VK6BDO	338	VK6KW	114	VK1DW	27	SINGLE OP MIXED		VK4HH	662
VK5BC	326	VK4CL	110	VK2HX	26	Callsign	Points	VK4ADC	601
VK5MTM	300	VK4DA	105	VK4FPDG	25	VK5LJ	856	VK2EWC	493
VK5AKH	294	VK4ATH	103	VK5HM	25	VK5GR	664	VK6AHR	431
VK6RC	294	VK4JK	103	ZL1N	25	VK2IUW	634	VK3ER	316
VK6FBJW	267	VK2LEE	93	VK5DP	24	VK7GN	316	VK2AOJ	167
VK6HDX	257	VK3AMW	90	VK7DW	23	VK3VT	269	VK2BV	150
VK1JP	235	VK6VP	88	VK4FILS	23	VK2BPL	260	VK2ACW	144
VK6POP	229	VK6TV	88	VK7FM	23	VK4AMG	219	VK4SAA	102
VK6BI	219	VK2EXA	84	ZL3CC	23	VK5SFA	179		
VK3GTS	213	VK4ZJ	82	VK4PQ	21	VK4FW	143	MULTI-MULTI	
VK3LM	203	VK6WE	80	VK2ACD	20	VK3HY	116	Callsign	Points
VK6MB	203	VK6DT	80	VK6EK	20	VK2VEL	102	VK4TS	1233
VK2QV	196	VK1MT	79	VK2CZ	18	VK5NE	92	VK2AWX	1037
VK5PX	192	VK6TU	79	VK5LOL	18	VK6NU	83	VK6NC	648
VK2VE	189	VK5DJ	77	VK2ZCM	15	VK3LRE	73	VK2BOR	341
VK3JK	189	VK2QH	76	VK6LO	14	VK3ZAP	57		
VK2SS	180	VK2FHRK	74	VK6NK	13	VK3DGN	27		
VK6USB	177	VK1NS	73	VK5SE	11				
VK2AOR	175	VK2LX	72	VK5WP	11	QRP CW			
VK7ZGK	164	VK4FLR	68	VK6DK	11	Callsign	Points		
VK6NI	160	VK7IF	65	VK6AIF	10	VK2IG	176		
VK7FB	158	VK6CN	63	VK2EY	8	VK3AGQ	96		

Check Logs: VK5NIK, VK1PE - Missing info. Incomplete data, Empty info in header.

To view the website we have beta tested ready for next year, please visit *http://hamclubs.info/scorer/?contest_id=VK-RD&year=2016&info=WIA*

A full list of statistics, photos and other information is on the WIA RD website in PDF format. Awards will be sent from the WIA office for all major 1st, 2nd, and 3rd place winners. Downloadable pdf certificates for individual state place winners will be available.

Best 73,

Alan Shannon VK4SN

Summer VHF/UHF Field Day Summary Results

Roger Harrison VK2ZRH

Ed: The Results of the Summer VHF/UHF Field Day have finally arrived, so are published below.

Division 1 – Results Summary

Section A1. Portable station, single op. 24 hr		**Points**	**Section A2.** Portable station, single op. 8 hr		**Points**
			Single-band:	VK5AR	156
Four-bands:	VK3ECH	1953	Four-bands:	VK5VAB	562
All-bands:	VK2DAG	8857	All-bands:	VK3WRE	4735
Section B1. Portable station, multi-op. 24 hr					
Four-bands:	VK3ER	1124	**Section B2.** Portable station, multi-op. 8 hr		
All-bands:	VK3UHF	8164	Four-bands:	VK5ARG	1472
Section C1. Home station. 24 hr			**Section C2.** Home station. 8 hr		
Single-band:	VK3PMG	297	Four-band:	VK5DT	1181
Four-bands:	VK3AV	1955			
All-bands:	VK3MY	5364			
Section D1. Rover station. 24 hr			**Section D2.** Rover station. 8 hr		
All bands:	VK2CU	10,930	All-bands:	VK3ZYC	1909

Division 2 – Results Summary

Section A1. Portable station, single op. 24 hr		**Points**	**Section A2.** Portable station, single op. 8 hr		**Points**
			Single-band:	VK1AT	2158
Four-bands:	VK3ECH	66,864	Four-bands:	VK5FBAA	3434
All-bands:	VK5ZD	51,066	All-bands:	VK3APW	30,012
Section B1. Portable station, multi-op. 24 hr			**Section B2.** Portable station, multi-op. 8 hr		
Four-bands:	VK3ER	26,550	Four-bands:	VK5ARG	20,887
All-bands:	VK3KQ	183,911	All-bands:	VK5SR	60,290
Section C1. Home station. 24 hr			**Section C2.** Home station. 8 hr		
Single-band:	VK3PMG	3480	Single-band:	VK2YJS	2387
Four-bands:	VK3AV	34,109	Four-bands:	VK3CG	9603
All-bands:	VK3MY	107,602			
Section D1. Rover station. 24 hr			**Section D2.** Rover station. 8 hr		
			Four-bands:	VK5GR	35,923
All bands:	VK5ZT	34,397	All-bands:	VK3ZYC	8487

- Top-scoring Foundation station operator: VK5FBAA. Division 1, A2 687. Division 2, A2 3434

E&OE

WIA Contest Website

To keep up to date with all of the major Australian contests, including rules and results, at the WIA Contest Website at:
www.wia.org.au/members/contests/about

VK3news Geelong Amateur Radio Club

Tony Collis VK3JGC

The GARC & VK100ANZAC Activation

The VK100ANZAC GARC QSL Card

With the assistance of the Wireless Institute of Australia and the Australian Communications and Media Authority a special call sign was allocated to the GARC for the duration of the Activation: **VK100ANZAC.**

The ANZAC QSL card above was designed by GARC members Chris VK3ACG and Courtney VK3FGIR.

Photo 1: The VK100ANZAC QSL Card.

Presentation by Donald Breguet

On the Friday evening prior to the Activation, Donald Breguet gave the GARC a presentation on how, when approached by the War Graves Commission, he provided his DNA to establish the identity of his second cousin, Justin Breguet, found with several other Diggers in a 100 year old mass grave at Pheasant Wood, France. As a result Private Justin Breguet's remains were formally identified in May 2016. At the end of his presentation Barry VK3SY presented Donald with a GARC Patron Certificate.

Photo 2: Barry VK3SY and Donald Breguet.

Donald and the story of his second cousin Justin were subsequently featured by 3AW, ABC TV and Channels 7 and 9 News when his relatives visited the grave at Fromelles on the 100th anniversary of his death. Donald subsequently paid a visit to Osborne house on the last day of the GARC ANZAC Activation.

Private Justin Hercules Breguet was born in Geelong, Victoria in 1897. He was single, employed as a bread carter and living in Geelong West. Private Breguet enlisted in the Australian Army on 16 July 1915 and was attached to the 29th Battalion, 3rd Reinforcement.

Photo 3: Private Justin Breguet.

On 18 February 1916, Private Breguet, aged 18 at the time, embarked from Melbourne, Victoria, on board HMAT A70 Ballarat. Private Breguet served in Egypt and the Western Front before he was killed in action during the Battle of Fromelles at Fleurbaix, France, on 19 July 1916. Private Breguet was one of 250 Australian and British World War One soldiers recovered from a mass burial site at Pheasant Wood in France in 2009 and reburied in the Fromelles Military Cemetery in 2010.

The French Connection

Barry VK3SY, who organised this Centenary Activation, approached a number of officials to write to their French counterparts regarding the GARC ANZAC Centennial Activation. The following responded:

- The President of the Wireless Institute of Australia wrote to his counterpart at the Réseau des Émetteurs Français.
- The State Minister for Veterans Affairs Hon. John Eren wrote to the Provincial President of Pas de Calais – Picardy which in part states:
  "Since that appalling conflict, there has existed a bond of friendship between the peoples of Australia and France in the knowledge that so many of the youth of both countries lie together and are remembered, at the Fromelles Memorial Park, Poziéres, Villers Bretonneux and on many other battlefield memorials."
- Chair of Administrators of the City of Greater Geelong, Dr Kath Alexander wrote to the Mayor of Roubaix and Réseau des Émetteurs Français.

Photo 4: Wreath laying ceremony at Osborne Park prior to VK100ANZAC Activation.

The Arrangements at Osborne House, Geelong

Prior to Activation, a wreath laying took place with Rex VK3ARG and Ken VK3NW and other GARC members alongside Vietnam Veterans, Nasho, Osborne Park Association and a number of visitors. (Osborne House was also the venue for the GARC's Morse to Magnetron Exhibition featured in the GARC's VK3 column in the September 2015 edition of the *AR* magazine.)

The Geelong Amateur Radio Club then activated the commemorative VK100ANZAC call sign from midday Tuesday 19 July until midday Thursday 21 July 2016 on HF and VHF. With the cooperation of the Osborne Park Association, the Activation was conducted from the "Bay Room" of Osborne House, Geelong, formally Australia's first Naval College, a Submarine Flotilla Headquarters and a respite home for Nurses returning from India and Europe during WW1.

Photo 6: VK100ANZAC first day of Activation.

Photo 5: The Icom IC-7800.

E-Mail contact had been initially established by Barry, with Marc Larivière F5RKU, Secretary of the Radio Club of Northern French F8KKH, in the city of Roubaix; Marc advised that the following stations would try to establish contact with the GARC over the three day activation period: F5RKU, F1CXC, F6HSJ, F4HOT, F4GBW, F6GEL, F6HSH and F4HRZ.

The antennas used for this operation were the tri-bander from the GARC club house west tower, that the Club's Wednesday Group had dismantled and re-erected at Osborne House for HF SSB, in conjunction with a 40 m dipole and a vertical for 2 m FM. Calvin VK3ZPK arranged an audio link between the "operations centre" and the entrance for visitors to listen to the contacts being made.

In all, a total of 329 contacts were logged on the High Frequency bands of 20, 40 and 80 metres and also the 2 metre (FM) band and on the last day Donald Breguet visited Osborne House to watch the activities.

On 20 metres, using the Icom IC-7800, there were 118 contacts, including 44 from all states of Australia and New Zealand and internationally from countries which included USA 43, France 3, Canada 3, Germany 2, Spain 3, Italy 2, Russia 4, and others from the Ukraine, Poland, Czech Republic, Croatia, Austria, Britain, Slovak Republic and Bogotá in Columbia.

On the 40 and 80 metre bands there were 199 contacts from all Australian States and New Zealand.

On 2 metres there were a total of 12 contacts made.

VK2 news

Tim Mills VK2ZTM
e *vk2ztm@wia.org.au*

Generally October is a quiet month with ARNSW. The only on-site activities at VK2WI this month is that WICEN NSW has a second training day planned for Sunday 9 October 2016; there is JOTA / JOTI over the 14th to 16th October weekend and VK2WI plans to transmit an opening address for JOTA on Saturday the 15th at 1300 hours if material is provided.

The Foundation weekends provided by ARNSW continue to prove popular with bookings often closing weeks before the event. The next and final course for this year will be over 19 and 20 November 2016. Inquiries to *education@arnsw.org.au*. It too could well be fully booked by the time these notes appear. The time consuming part of the course, as many Assessors know, is the time needed for the practical assessments. The first ARNSW Foundation course in 2017 will most likely be in January on the weekend of 21/22 January.

The Oxley Region ARC at Port Macquarie held a Foundation weekend in late August with six successful candidates. Their next course will be when sufficient registrations are received so intending candidates should contact the club via PO Box 712, Port Macquarie 2444. Please pass the word round the Mid North Coast that courses and upgrades are available. These notes are an opportunity to advise of courses and assessments provided by groups and clubs throughout VK2 [and beyond] but be aware that there is a two month lead time on material into *AR* magazine.

Summerland ARC at Lismore held their SARCFEST in late August with a good attendance reported. The Blue Mountains ARC held their WINTERFEST in early September after an absence of a couple of years. The Armidale District ARC has planned their AGM for Saturday morning 15 October 2016 in the conference room at their club house with an 11 am start. HADARC continue their 40th anniversary celebrations for the rest of this year. Waverley ARS will celebrate their centenary in 2019.

WICEN NSW will be providing communication coverage to the annual Hawkesbury Canoe Classic over the weekend of 29 and 30 October 2016. They are currently trialling a DMR repeater VK2RRW on 438.1 MHz in the North West sector of Sydney.

The Kurrajong Radio Museum was established many years ago by Ian VK2ZIO who recently discovered that a major internet search engine had it listed as permanently closed. This was not correct and when it was reported as a news item on VK2WI, several amateurs made contact with the search engine company who quickly corrected the error. Curator Ian VK2ZIO would like to thank those who reported the error and therefore expedited the correction. The museum is located at 842 Bells Line of Road, Kurrajong Hills and is open on the weekend or by arrangement. Contact: vk2zio@yahoo.com.au

ARNSW has scheduled a further in the Talk Fest series for Sunday 6 November 2016 at VK2WI Dural. Topics and other information will be given over the Sunday news bulletins. While on the subject of weekly broadcasts, there are two from VK2WI on Sunday – at 10 am and 7.30 pm – and the declining conditions is making coverage difficult. A reminder that the lower frequencies of 80 metres 3.595 MHz LSB and 60 metres 5.425 MHz USB [morning] is providing best state-wide coverage. The higher HF frequencies suit coverage beyond the borders.

73
Tim VK2ZTM

Over to you

Enzo Reyes VK3FRAD

I am writing this letter here because I feel that amateur radio is a hobby that can richly add to people's lives. It is a hobby that can educate and help communities, which is also why I find it so curious as to why it is in a state that seems to be in decline.

Yes, numbers have gone up: but how many have moved to Advanced licences? The numbers are always raised in any discussion; I believe this is due to multiple reasons. I will focus mostly in Australia and how the lack of action from the WIA is also aggravating the problem.

Amateur radio is more than rag chew.

This is something I always read about introduction to amateur radio: "You can talk to people in other countries". I think this line would have had more sway back in the day when telephone calls to other countries where measure in dollars per hour and no mass communication network existed.

Today we have the internet. I think amateurs have mostly embraced this technology and used it in their infrastructure and expanded on it. However, it is the perception that does not help; people believe amateur radio is old men talking about their lives to other old men and as such they see this in the same vein as chatroulette or omegle *(Ed: both of these references are to online sites offering person to person communications).* Why should they talk with other strangers? What is fun about that?

We can start by focusing that amateur radio is about experimenting with radio. We could capture easily more of the maker/hacker crowd if we focused bit more on this, especially with the explosion that is software defined radio.

We can get the attention of people with a focus on community by introducing them to EMCOM (emergency communications). We have to show the depth of what amateur radio offers to the communities that people live in.

Hikers and people who love being outdoors have SOTA, POTA and DXpeditions; for those who love points and games there is contesting as well as other award systems in amateur radio, satellite work, fox hunting and other activities. Yes, some of it is mentioned but the idea is to move the focus from rag chew internationally to "look, here are all the things you can do"!

Capturing the young

This is a pet hate of mine. The cost to enter amateur radio has been going down but there is an attitude within some in the community that this is bad. However these same people complain that young people don't enter the hobby as much.

Younger people have very little income and the radio equipment price drops are to be seen as a good that causes younger people to enter the hobby without investing massive amounts of their money. This lowers the cost of entry and makes it more palatable to try.

However cost is one part. We don't do enough to encourage university clubs or run enough activities in high school. This is a problem I blame solely on the WIA. I will elaborate on this more later.

We should be introducing amateur radio to people via radio finding activities. Recently the RSGB organised a contact event with the ISS with several schools. Could we organise something similar? If so why haven't we? This would totally capture people in to the hobby as well as STEM fields in general.

Universities would be an incredible fertile ground for getting people into the hobby. When I was at university there were no amateur radio clubs; there was the student union radio but that is not the same thing!

Clubs should be seeded at universities, offer people a quick entry to the hobby and offer them courses in campus that let them get their licence, especially Foundation. If they get their licence, offer them a cheap Chinese radio included in the price of the test! They do this in the United States! *(Ed: A reasonable idea in some respects, but what source of funds do you suggest? It is unreasonable to expect the WIA to fund such activities. Our systems in Australia are very different to those in the US. I am unaware of how university clubs are funded in the US, but it is probably not by the ARRL, the equivalent body to the WIA.)*

Foundation licence

The Foundation licence seems highly anachronistic. Given the power limitations, it is quite infuriating that digital modes are not on the table. QRP operation using digital modes allows people to achieve their communication goals much quicker, work more countries and become more involved in the hobby.

However there is a lot of discussion about this already, however I will add one more bit. There seem to be little activities in trying to encourage foundation licence holders to be in the hobby.

An example could be a Foundation licence contest, similarly structured to the ALARA contest, except rather than women, it's anybody with an F call. Activities that target F calls would encourage them to be more active in the hobby and stay in the hobby and move them up the licence ladder.

Other activities could be trying to setup a basic FM transceiver using an SDR; this ties amateur radio directly with the future as SDRs become more prevalent and we can tap into people who are interested in this technology.

SDR

This is something that should be taken front on; we must capture the SDR community. In the past Amateur Radio was heavily associated with electronics. This is still true and will hold true, however efforts must be made to capture people interested in radio with SDR.

Not just as users but as developers allowing people to experiment with SDR. This a perfect example why you would like to have an amateur radio licence, a real chance for people to quickly come up with modulation schemes, scan/decode signals which radios cannot do so because they don't support it.

Our courses should reflect the incoming technological field especially with SDR. Amateurs should move from being consumers of software to that of developers of software modulation schemas.

This would bring a lot of experimentation to the hobby, rightly or wrongly! There must be experimentation.

The WIA

The perception here in Australia is that the WIA is a hopelessly dysfunctional body; is this perception correct? Considering it takes weeks to months to get a call from the WIA.

My personal experience, as of recently; while I am trying to sign up to the WIA, I had an error occur on their payment system and contacted them. It's been more than 24 hours and they haven't replied to my offer to give them money! *(Ed: The WIA web form indicates that the WIA endeavours to respond to enquiries within two days. I believe that your expectation of a response in less than 24 hours is unreasonable. The office has only two members of paid staff, with one of them engaged full time in dealing with assessment and callsign request processing.)*

The Club affiliation structure is also a problem; many clubs ask "What is the point of being a WIA member as it offers very little for them?"

A lot of responsibility is heaped upon clubs to try and encourage the hobby; however this is a task that should be taken especially by the central organisation. This requires coordination which many clubs do not have; seeding clubs at universities, setting up high school activities should be a WIA task. Not one for member starved and time starved clubs!

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Organising field days, doing the social network activities to bring people into the hobby, yes it is a big task, among many other task that the WIA has to do. However this cannot be done by small club operations. Clubs compliment the main activities. They, unless they have a very large state club that has the resources to do it, can't take all this in and don't have the coordination to do this.

I was listening to a WIA News broadcast, and they mentioned quite callously that if something went wrong it was the Institute who would have the hate. I think the attitude that presented to me as I was listening to it was that of a standoff between the amateur radio community and those who run the WIA. They seem themselves as separate people: this is not a good attitude.

Should the WIA be dismantled? No. It is a good idea and can become more than what it is now, especially once it exits this dysfunctional obsession it currently has. *(Ed: You claim that the WIA has a "dysfunctional obsession", yet have not provided any evidence that one exists.)*

Updating their web presence is a first step, this also includes clubs. I've seen some clubs still have website which originate from the 90s. Much like adverts, website are the first thing people see; if they give a poor impression people will not be interested.

This has been a long rant and one I wanted to post for a while. I find that amateur radio can offer a lot to individuals and community. The WIA does a lot of good work as well. However, we could do things a bit different to bring people in to the hobby.

Editor's response

My impression is that Enzo does not have a balanced, informed information base upon which he has launched his comments – he has gained some information from a variety of sources, but appears not to have sought deeper information before making his views public, firstly on the Facebook group "Friends of the Wireless Institute of Australia" before submitting those comments for inclusion in *AR* magazine as an Over to You item.

I personally find many of Enzo's statements to be ignorant of the facts, and will point out some of these below. I have decided to publish the contribution, despite it being well off the mark in several aspects, in my view. I invite readers to make up their own minds.

How can you blame the WIA for the absence of amateur radio clubs in Universities? Perhaps the real decline in the number of clubs (of any type) in Universities are the Federal Government policies which restrict the "Amenities" fees that Universities can charge students and how the income from those fees can be used. Federal Government actions several years ago (the introduction of so-called "Voluntary Student Unionism") had massive impacts on the funding of many activities on university campuses, causing much such activity to disappear or to have only minimal funds able to be disbursed by the university to the Student Union, together with severe limits as to how such funds could be spent. I am sure that the WIA would offer some support to amateur radio clubs if they existed and were affiliated with the WIA, but any such support to any Club must be within the constraints of both policy and budget.

Regarding ARISS contact events, the WIA and ARISS have organised such events in the past and Australian amateurs, most notably Tony VK5ZAI and Shane VK4KHZ, have contributed huge amounts of time to providing ARISS contacts for Schools within Australia and around the globe. Other clubs have also organised other educational events based around amateur radio – for example, see the report of the joint SARC/Scout event on ANZAC Day which appeared in the August issue, and the report from Hobart on amateur involvement in the Festival of Bright Ideas in this issue. The WIA has announced that it is organising a conference to explore how the WIA can assist with STE(A)M activities, to be held in Canberra in November.

It is easy to make such claims such as "the WIA is a hopelessly dysfunctional body", but you have provided no evidence. Others claim that the WIA is dysfunctional, but they also provide little valid evidence. Having no evidence does not stop them from continuing to make such claims. I agree that some individuals seem to consider that the WIA could do a better job in certain areas, but that does not prove that the WIA is dysfunctional in any aspect of its operations. Could the WIA perform better? Probably so, but it must operate within its capabilities and the limits of its budget. For improved performance, the WIA probably needs many more capable volunteers willing to contribute, a higher number of financial members and thus higher income, other sources of funds (any realistic suggestions?) or all of these.

There are no simple answers.... Attitudes of individual amateurs, of Clubs, and perhaps of some individuals involved in the WIA, all need to change. If everyone continues to hold destructive views, then the perceptions of the WIA and its work will likely continue to decline. Those who continue to "throw spears" at the WIA rarely offer constructive suggestions. It is also a very rare event that they acknowledge any good outcomes achieved by the WIA.

The reality is that we have a single recognised representative body to negotiate nationally and internationally on behalf of radio amateurs in Australia. Would it not be better for ALL amateurs in Australia to become actively engaged with that body?

Peter VK3PF

Prepare

Jamboree on the Air JOTA 16 October 2016

Jamboree on the Air involves both Guides and Scouts.

Annual event on the third full weekend in October, where the Scouts and Guides from around the world get together with amateur radio operators to communicate with each other around the world.

In Australia special callsigns can be allocated by ACMA.

DX Talk

Luke Steele VK3HJ

Solar indices picked up early and late in August, and an increase in the speed of the solar wind from a recurring coronal hole resulted in geomagnetic storms into early September. Conditions on the bands generally picked up through the month, and even supported late evening propagation into Europe on 20 and 17 m. There was a bit of daytime activity on 15 and 12 m, but this was mostly short skip into the western Pacific.

Whilst the solar cycle 24 is clearly in decline, the August average sunspot number was 50.4, the highest it has been since February this year. Conditions should improve into summer time, so do make the most of any high band openings while you have the chance, as these will likely become less possible for the next few years.

Top Band is starting to see some improvement at last, with stations in North America worked on many evenings in August. Also being heard now are Asian stations on 160 m, mostly from Japan.

DXpedition CY9C St Paul Island, near Nova Scotia, Canada was heard or worked from 80 to 20 m, but the high bands didn't play for us. The team had to leave the island a day early due to bad weather.

Ken and Nob, operating as VP6J Pitcairn Island couldn't be heard early on in their activation, but later were workable from 160 to 17 m, mainly on CW. The higher bands in this case were blocked in our direction by the topography of the island. If you didn't manage to work VP6J, listen for VP6AH.

Ulrich DJ2AH is operating as VP6AH on Pitcairn Island, and will be there until late November. He has been heard and worked in VK on SSB, and is using just a 100 watt rig and a Windom antenna.

Tom KC0W was on air from Tuvalu as T2COW, then Vanuatu as YJ0COW. On Zanzibar Island (Tanzania) was 5H1XX. A couple of American operators were operating from islands in the Nunavut Territories in the far north eastern part of Canada, and XR1T was a Chilean IOTA expedition to Isla Santa Maria.

Closer to home, Indonesia celebrated its 71st Independence Day with a special YB71 prefix, and Malaysia celebrated its 59th Independence Day with a special 9M59 prefix.

Upcoming DX

October sees quite an increase in DXpedition activity, with plenty to look forward to on the calendar.

H44GC Solomon Islands, Honiara, Guadalcanal (OC-047). 24 September – 3 October. Stan LZ1GC and Emil DL8JJ will be operating 160 - 10 m, CW, SSB and RTTY, with a focus on Low Bands. QSL via LotW or LZ1GC.

VK9L/W1SRD Lord Howe Island. 1 - 2 October. Steve W1SRD will be on air for the Oceania DX Contest. QSL via LotW.

T2R Tuvalu. 27 September - 4 October. John KK7L and Jared N7SMI will be operating from Funafuti Atoll (OC-015), 80 - 10 SSB, CW and RTTY. In addition to the DXpedition activities, John and Jared aim to support the several local amateurs in establishing a permanent and active Tuvalu Amateur Radio Club. QSL via LotW. For more information see their website. *http://t2radio.com/*

T2J Tuvalu. 4 - 10 October. Ken JA2FJP and Nob JF2MBF continue their Pacific DXpedition in Tuvalu. QSL via LotW.

T31T Central Kiribati. 4 October – mid-November. Dom 3Z9DX, Les SP3DOI, and Przemek SP7VC will be on Kanton Island (OC-043) for about six weeks. They will be doing voluntary work with the local community, including work on the Radio Emergency Communication System. QSL via 3Z9DX. For more information on this project, see their website. *http://k38dom0.wixsite.com/3z9dx/t31t-kanton-isl*

H40GC Temotu Province, Nendo Island (OC-100). 4 - 17 October. Stan LZ1GC will be operating 160 - 10 m, CW, SSB and RTTY, with a focus on Low Bands. QSL via LotW or LZ1GC. For more details see the website. *http://www.c21gc.com/index.php/t2gc-plans*

S9YY Sao Tome and Principe. 8 - 23 October. Peter DL1RPL and Ruediger DK8YY will be operating 160 - 10 m.

3D2GG Fiji. 11 - 13 October. Ken JA2FJP and Nob JF2MBF conclude their Pacific DXpedition in Fiji. QSL via LotW.

7P8AO Lesotho. Pista HA5AO will be operating mainly CW on 80 - 6 m. QSL via ClubLog or HA5AO.

H44GC Solomon Islands, Honiara, Guadalcanal (OC-047).18 - 21 October. Stan LZ1GC will be operating 160 - 10 m, CW, SSB and RTTY, with a focus on Low Bands. QSL via LotW or LZ1GC.

9G5AM Ghana. 19 - 26 October. Peter S54W, Janko S57L and Rado S59ZZ will be operating from

Langma, Kokrobite near Accra. They plan operations on 80 - 10 m, CW, SSB and digital. QSL via S59ZZ. For more information see website. *https://www.qrz.com/lookup/9g5am*

Other news

The Aves Island DXpedition YX0V was put on hold until further notice, due to "reasons outside the control of the DXpedition team". There was a hurricane threat to the region, but no further information has come to hand.

The San Felix Island DXpedition planned for March 2017 now appears to be cancelled, due to problems with permission to land on the island, which is controlled by the Chilean Navy.

Please email me with any DX related news for inclusion in this column. I am particularly interested in hearing about DX worked or heard in other states. *vk3hj@wia.org.au*

73 and good DX,
Luke VK3HJ.

IARU Liaison Report

Jim Linton VK3PC
e *iaru@wia.org.au*

International Amateur Radio Union Region 3 Directors met in Tokyo with an agenda that included ways to support the seeking greater 50 MHz band access at the next World Radiocommunication Conference (WRC), and to further improve the website facility.

The meeting on August 22-23 saw Professor Rhee HL1AQQ, Peter Young VK3MV, Don Wallace ZL2TLL, Wisnu Widjaja YB0AZ, Shizuo Endo JE1MUI, Gopal Madhavan VU2GMN, and Secretary Ken Yamamoto JA1CJP in attendance.

Also attending the two-day meeting at the JARL headquarters were IARU President Tim Ellam VE6SH, and IARU Region 2 President Reinaldo Leandro YV5AM.

Special attention was given to how all member societies could support the IARU move for spectrum defence and expansion at the WRC in 2019. In particular, Agenda Item 1.1 seeks the 50 MHz amateur allocation now available in Region 1, to be harmonized worldwide.

The IARU plan and recommended action to be taken by member societies in support is expected fairly soon, as it ramps up its preparation planning.

The IARU Region 3 will have high level representation at the Asia-Pacific Telecommunity (APT) Preparatory Group (APG) meetings in the lead up to WRC-19.

The APG meetings began in 1996 with the objective of harmonising views and developing common proposals from the Asia-Pacific region to take to the WRC.

The APT runs these meetings to see if a common position on the WRC agenda can be found. The meetings are organised along the same lines as a WRC; the top level body, the Plenary, allocates groups of related topics to Working Parties, then Drafting Groups are involved.

The Drafting Groups are where most of the work is done. They discuss the information by calling for input documents, the views of interested parties including the IARU Region 3.

Output Documents are then discussed and provide a preliminary APT view on the topic. In most cases these Drafting Group documents pass through their Working Party and the Plenary unchanged but, where there is controversy may be altered at any level or sent back to the Drafting Group for further work.

Similar regional meetings are held by the **Inter-American Telecommunication Commission (CITEL)**, Arab Spectrum Management Group (ASMG), African Telecommunications Union (ATU), European Conference of Postal and Telecommunications Administrations (CEPT), and from Russia the Regional Commonwealth in the Field of Communications (RCC).

The meeting in Japan also decided it was essential for member societies to have interactive pages on the IARU Region 3 website, where they can update information themselves and post important news items.

Major work is underway to re-format the Region 3 band plan so it aligns with the other two regions and also to make it easier to read. All documents including guidelines have now been reformatted and are also on the website.

The reactivation of Amateur Radio in Fiji and the other Pacific

islands is being actively pursued, along with consideration on how to assist newcomers to the hobby, especially young radio amateurs, with low cost entry level transceivers.

The Directors also looked the resolutions made at the 16th IARU Region 3 Conference in Bali Indonesia in October 2015. Each resolution adopted was again reviewed and measured against the action taken on them.

The WIA in 2013 initiated the Michael J Owen Plaque to recognise excellent Single Operator achievement within Region 3 during the IARU HF Championship.

The winning entries were: 2013 Katsuhiro 'Don' Kondou JH1GBZ (JH5GHM, op), 2014 VK2DX Nick Hacko VK2DX, and 2015 Champ Muangamphun XW1IC (E21EIC, op) - who received his plaque in a presentation by Peter VK3MV at the Ham Fair.

The plaque is in honour of Michael J. Owen who served both the IARU and the WIA over many years.

The Directors are expected to have a face-to-face meeting in the first week of September 2017, soon after the JARL Ham Fair in Tokyo.

Noise floor can affect radio services

The Wireless Institute of Australia (WIA) in its submission to the Spectrum Review – Potential Reform Directions paper – supported extended ACMA enforcement measures with it developing better regulation of electrical, electronic and radiocommunications devices.

Many devices emit radio frequency energy that could interfere with radio services and there has been concern about them, and the need for possible regulatory action.

The WIA submitted in November 2015 that the relentless raising of the radio noise floor was an issue that needed to be tackled. Many devices emit radio frequency energy adding to the radio spectrum noise floor that could cause interference in the spectrum.

The ACMA implementing effective, enforceable regulation, coupled with improved equipment standards, will go a long way towards mitigating or reversing this trend.

Around the world attention is being played to the worsening electromagnetic environment and the interference it can cause to radio services.

For example IARU Region 1 Electromagnetic Compatibility (EMC) Working Group member Thilo Kootz DL9KCE, is promoting the relatively simple to use NoiseReporter.

The aim is to quantify man-made noise or the noise floor expected in a given environment. The IARU Region 1 website has a link to the NoiseReporter software and more information.

The American Radio Relay League (ARRL) has been concerned for some years and believes a comprehensive noise floor study must be held - a view echoed by those involved with audio, broadcasting, manufacturing, and radio communication industries.

The ARRL claims that without such a study the magnitude of the problem will be virtually unknown. The Federal Communications Commission (FCC) Technological Advisory Council was looking at changes and trends to the radio spectrum noise floor.

VK3 news Amateur Radio Victoria

Jim Linton VK3PC
e *arv@amateurradio.com.au*
w *www.amateurradio.com.au*

Changes at the Ashburton Office

After many years as Office Manager, and before that Secretary of Amateur Radio Victoria, John Brown VK3FR has retired and is replaced by Rob Whitmore VK3MQ who has been a long-time volunteer.

Always looking to streamline the delivery of membership services, a review of the electronic payment system has been held in view of dramatic changes imposed by the banks.

To avoid the rising cost of monthly bank charges, a credit card reader has been purchased that will enable electronic billing to continue without fees.

Repeater report

The maintenance of the vast VK3 repeater network has continued over the winter months, fitting in with volunteer availability and commercial site works.

For example recently VK3RMM Mt Macedon had its 70 cm antennas re-jigged to provide better receiver performance. On Mt Dandenong at VK3RML, new hardware and a rebuild of the racks has been completed.

Mt Wombat VK3RGV has a new tower installed and is waiting for new radios and hut fit out. The VK3RWZ repeater on Mt William has been fixed with a new repeater installed with no reported interference to aviation gear.

In the south-west VK3RWL Warrnambool repeater has new antennas and been assigned to the volunteers at the Geelong Amateur Radio Club to be installed.

The VK3BWI broadcast facility has also been upgraded with new transmitters for VHF and UHF, providing stronger and clear signal on many areas each Sunday.

KRMNPA activity weekend grows

With the warmer months ahead a number of radio amateurs are setting their sights on the annual Keith Roget Memorial National Parks Award (KRMNPA) activity weekend next month.

So far 15 unique parks are planned to be activated with eight operators and many visiting more than one each, with no limit on the number of times a National Parks is activated.

One of them will be Mick Geraghty VK3PMG who achieved the Merit Award for having worked all 45 National Parks in Victoria – a very pleasing personal achievement.

Now under his new callsign of VK3GGG, he has already qualified by working 25 National Parks, and will be heard from the Grampians and Karra Karra next month.

The event attracts a few from VK5 and VK2 who venture across the borders. The sixth annual Keith Roget Memorial National Parks Award activation period is Friday 11 until Monday 14 November 2016.

VHF/UHF - An Expanding World

David K Minchin VK5KK

Introduction

Hello again. This month we have an update on the VK5RSE beacon upgrades as well as the Indian Ocean dipole (not an antenna!). Also we have a report of yet another 13,000 km 50 MHz Sporadic E opening, this time to the USA from VK3! This month's technical corner we have part two of the microwave local oscillator series as well as Kevin VK4UH's Meteor Scatter report.

VK5RSE Beacons, 21st Century upgrade!

The VK5RSE Beacon has been in operation for many years firstly providing a very useful propagation indicator at the crossroads of various Tropo paths at the bottom of Australia. The first beacon was established by the South East Radio Group (SERG) on 144.550 MHz in the 1980s, it has been heard as far away as ZL (3018 km 5/1/11). Since then the 432, 1296 & 10368 MHz beacons have been added. The higher frequency beacons are directional mostly along the east/west path although this does not always preclude reception on other paths. For example, the 10368.550 MHz beacon can usually be received in the southern Adelaide Hills (350 km) with only moderate conditions, with a coastal duct it will be 59++ even on open waveguide!

In 2013 all beacons received a progressive update to GPS lock all oscillators. Now in 2016 Colin VK5DK reports the next phase of upgrades for the VK5RSE beacons:

"It has been decided to upgrade the 144.550 MHz, 432.550 MHz & 1296.550 MHz to include Digital modes as well as CW. The Beacons will be using Wayne ZL2BKC's PLL units plus the PAs will all be upgraded and using RF modules.

On 144.550 MHz the beacon will transmit three different modes they being CW, JT65B & JT4D. A Beacon controller board is fitted with a GPS unit which controls the timing for the Digital modes to ensure that it can be decoded, on 432.550 MHz there is only two modes, that being CW & JT4D & on 1296.550 there is also two modes CW & JT4F.

At present only the PLL units are running "Under Test" conditions at my QTH with the Driver & PA units still to be fitted. It is planned also to upgrade/replace the 144 MHz Beacon antenna and do maintenance on the other antennas, which we hope to have all up and running by late September or early October. The only Beacon currently operational is the 10 GHz Beacon on 10368.550 MHz which may also be upgraded within the next twelve months."

In the Microwave Oscillator series below you will find more information on the ZL2BKC PLL. Colin also reports on their regular 2 metre Skeds through winter from South East VK5.

"There are usually two or three local Mt Gambier Amateurs that hold regular morning skeds on 144.100 MHz SSB between 0730 - 0800 CST with Gordon VK3EJ Cobram on the River Murray, Mick VK3GGG in Stawell, Ian VK3AXH in Ballarat and Ron VK3VBI in Caramut plus other stations when conditions are enhanced. The distance to Gordon VK3EJ is 480 km, the path goes across the Grampian Ranges around Mt William (1200 m ASL). We can work Gordon every morning without any propagation, with aircraft enhancement signals can be over 59".

The Indian Ocean Dipole

No this is not a new antenna for maritime HF use! The Indian Ocean Dipole (IOD), also known as the Indian Niño, is an irregular oscillation of sea-surface

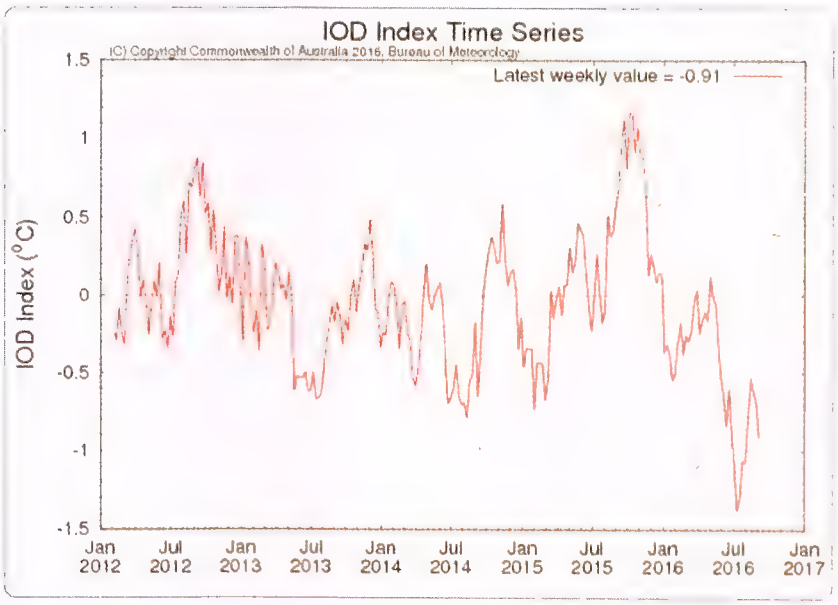

Photo 1: Indian Ocean Dipole data since 2012.

temperatures in which the Western Indian Ocean becomes alternately warmer and then colder than the eastern part of the ocean. The effect of the IOD is to move moisture towards or away from the Australian continent. The IOD can form between the months of May till December and can last between two and seven months. From December onwards the wet season in northern Australia prevents/curtains an IOD.

When an IOD is in a positive phase it produces warmer/drier conditions in central and south east Australia. Every single drought in the south east of Australia since the late 1800s has coincided with a positive IOD. When an IOD is in a negative phase it is almost the reverse with higher than average rainfall in the south east of Australia as well as winter rains further north. There is some correlation between IOD's and the Pacific Ocean conditions. The IOD tends to be in positive phase when there is an El Nino and a negative phase when there is a La Nina. When the two actually coincide there can be extreme conditions, i.e. the driest year on record (1982) a positive IOD aligned with an El Nino peak and the wettest year on record (1974) a negative IOD aligned with a La Nina.

A significant negative IOD commenced in May 2016 hitting the highest level in July (positive or negative) since recording began 50 years ago. As of the end of August 2016 the El Nino in the Pacific Ocean (Southern Oscillation) remains neutral although a late (and weak) La Nina is possible. The Indian Ocean negative IOD dipped but is heading towards another peak. In the last few weeks there has significant influence with high rainfalls recorded across southern Australia. In summary, the IOD does have a clear impact on weather in southern Australia.

When looking at the cycle there is some correlation with the Tropo propagation conditions we have experienced. If you look at the IOD Index time series for the last 4 years you will see there was a positive IOD late in 2015 (much larger than previous years) that lasted till late November. Coincidentally the usual Southern and VK6 Tropo paths were poor after some early October openings until mid-December. The 2015/6 Tropo season that followed was below par. The previous year (2014) showed a similar pattern but not as dramatic. Now that we have had a record negative IOD just what will be the effect? The better than average mid-winter Tropo during this period was/is a direct result of a series of stable high pressure cells over eastern Australia (reported last month). It is not clear just what the actual link is although data collected so far seems to tie this in with drier conditions up the eastern coast.

So what next? Depending where you live either IOD and/or El Nino/La Nina is a "seasonal factor" to consider with Tropo propagation, just how significant needs more anecdotal evidence. Indeed, IOD research is only recent with impact studies still in progress. We will still need our crystal balls for a while! For more information, please go to the BOM site: http://www.bom.gov.au/climate/enso/

50 MHz VK3 to W6 – The Missed opening!!

The advantage of digital modes has been discussed before but most in terms of weak signal advantages. WSPR is a good beacon mode, enabling un-attended 24 hours a day operation with off the shelf (but stable!) transceivers. Much better than calling CQ all day and listening to white noise maybe? OK, not a substitute for a "proper" SSB or CW contact but in the last 12 - 18 months there has been a significant jump in 50 MHz operation globally. It was perhaps only a matter of time before the various areas of WSPR operation had some cross over, indeed from Europe to the USA it has already and more locally JA spots are a regular occurrence. But now VK to California?!

Brian VK5BC was checking wsprnet.org spots on 19/8/2016 when, by chance, he found three spots from VK3PP of Chris N3IZN on 50.294 MHz! The best signal was -14 dB at 0230 UTC on 13/8/2016. That is CW copy for a gun operator, not bad considering neither station was probably beaming at the other!

Whilst there has been erroneous "false" WSPR spots recorded before (usually a HF band selected!) this one after all investigation would seem to be genuine. Cross checking on KB9AMG website confirms that both stations were spotted on "local DX" at either end. Frequency offset analysis from the WSPR site confirms offsets if you do some mathematics. There was a Sporadic E opening at the time between VK2, 3, 7 and ZL at the time. We reported last month that Chris N3IZN has been using WSPR to KH6 on 50 and 144 MHz. There were reports on a couple of US reflectors of Sporadic E at the same time (late afternoon in California). Roger VK2ZRH reported favourable ionosonde data from both Norfolk Island and Sydney for Es as well as no significant TE indicators.

So it looks like we've had another long distance (13059 km) Sporadic E opening linking into Northern hemisphere E that may have lasted half an hour. Hopefully this random "missed" opening sparks some serious WSPR 50 MHz operation towards Europe and now the USA.

```
2016-08-13 02:42 N3IZN 50.294526 -27 0 DM13ji 100 VK3PP QF02xf 13059 241
2016-08-13 02:30 N3IZN 50.294526 -14 0 DM13ji 100 VK3PP QF02xf 13059 241
2016-08-13 02:20 N3IZN 50.294526 -20 0 DM13ji 100 VK3PP QF02xf 13059 241
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Photo 2: VK3PP's WSPR Spots of N3IZN on 50.294 MHz.

The Microwave Local Oscillator Part 2

In the first part of the series we briefly covered the various factors to be considered with microwave local oscillators. This part we will focus on the various PLL options.

An overtone crystal oscillator followed by a series of multiplier stages has been the traditional way to generate a microwave local oscillator for narrowband operation, for 40 or more years. Usually the oscillator is in the 100 MHz region, with anything from 24 to 1200 times multiplication. The circuitry involved for 4 to 7/8 stages of multiplication can be quite extensive and bulky.

More recently (last 20 years), single chip PLLs have become commercially available up to 2.5 GHz. Initially designed for less critical broadband links, more recently PLLs to 4.4 GHz (ADF4351) and 6 GHz (LTC6946) have become widely available. The higher fundamental frequency means less multiplication stages and complexity. In the case of transverters operating in the 1.2 - 5.7 GHz range the PLL can directly drive the mixer or a simple X2 or X3 multiplier.

There is a wide range of suitable integer N PLLs from a number of manufacturers. For example, Analog Technologies ADF 42** and AD43** series, Silicon Labs Si4133 and Linear Technology LTC6946/7. There are also PLLs that are combined with I/Q mixing on the one chip for specific frequency ranges used for data, etc.

All of these PLLs fall into one of two groups, those that use an on-board VCO and those that don't. Most things being equal (proper circuit layout, optimum VCO filter design, good mechanical construction), a PLL with an external VCO will have better phase noise characteristics than one that has the VCO on the chip. That is not saying that a PLL with an integrated VCO is not good, just that a PLL that uses an external VCO has the potential to be better and more suited to more critical mmWave use. That external VCO could be an external stripline oscillator, a DRO (Dielectric Resonant Oscillator) or a VCXO (Voltage Controlled Xtal Oscillator). As the latter two are higher Q resonators there is clear potential for better phase noise characteristics. We will talk about these next month, for now we will focus on the integrated VCO variety.

Firstly, as with any integer N type PLL, the higher the Phase detector frequency the better the phase noise, lower the spurs, etc. Ideal target frequencies are in 500 kHz or larger steps: i.e. select "whole numbers" in MHz like 2484 MHz to multiply up to frequencies above 10 GHz. I try and use 2 & 5 MHz but it does get hard to hit an exact frequency when you are multiplying to 76 GHz. A better alternative is to get as close as you can and use a different IF frequency hence, 430 - 450 MHz is popular using a FT-817. On lower GHz bands it is less of an issue.

Integrated VCO PLLs use an oscillator that in some cases covers a wide range, others just cover a particular band or sub band. Rule of thumb, the narrower the bandwidth of the VCO the better the phase noise. An example of this is the ADF4360 series that covers 400 - 2700 MHz with a series of 8 variants on various sub bands. The best ones are those designed for a narrow range, for example the ADF4360-0 covers 2400 - 2725 MHz. The same PLL can also be used on 1200 - 1365 MHz by using the divide by 2 option. These are the PLLs used in the tiny "Israeli" PLLs on eBay. Whilst that one is only with one preset frequency, the 12F675 PIC can be reprogrammed for any other frequency of modified to do 2 by using a spare I/O pin to select. If you need to modify one of these please email me!

Other PLLs like the ADF4350/4351 (2.2 - 4.4 GHz) and the LTC6946-3 (3.05 - 5.8GHz) use wider range VCO (frequencies in brackets) with an up to 2:1

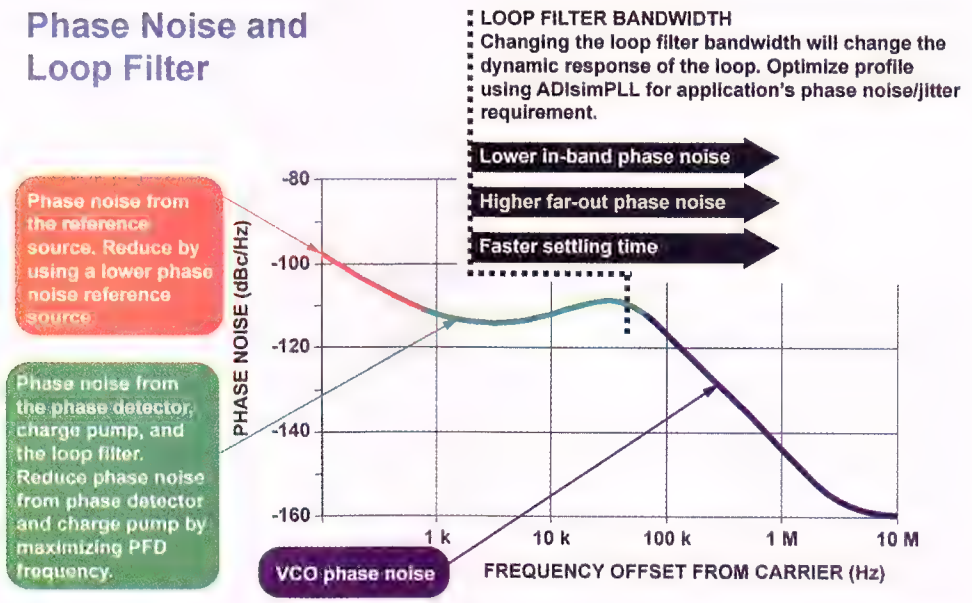


Photo 3: ADF4351 Loop Filter design considerations.

frequency range. Both can be programmed down to go below 100 MHz with binary step divider (2/4/8/64). A very popular version is the one manufactured by ZL2BKC using the ADF4351 *https://zl2bkc.com/projects/adf4350-pll/* The board can be preset to 16 frequencies from 35 - 4400 MHz and re programmed using a USB RS232 lead and a terminal program. A number of these are in use up to 76 GHz confirming the oscillator design is well sorted!

The LTC6946 is a higher frequency PLL, the -3 variant is rated to 5.8 GHz but will work reliably up to 6.1 GHz. G4JNT once sold PCBs for this chip (as well as G8ACE) but currently neither available. I have built both versions and found the G8ACE to have closer to specification phase noise, this would seem to come from the revised (better) board layout. They are very compact (30 x 30 x 50 mm), I use these in my patch panel 5, 10 & 24 GHz transverters that have been used O/S. Hopefully there will be more PCBs!

The soundness of design and construction is important to get anywhere near manufacturers specifications on noise and spurs. Things like the supply rail stability and noise, board layout, ground vias under the chip and bypassing have to be spot on. Some of the Chinese eBay PLLs appearing are questionable in that regard and some may not even have genuine ADF4350/1 chips! When programming it is also critical that the Loop filter is correctly calculated for the channel spacing. In the chart you will see the relationship between these various factors. There are plenty of resources for calculating values, luckily filter selection is almost universal across another of brands of PLLs. The best place is the manufacturer's website. Another resource is ZL2BKC's website or SV1AFN's website *https://www.sv1afn.com/adf4351m.html* Just look for the link to "ADF4351 Cheat Sheet".

I haven't covered all PLLs, more over those that are currently popular and available. Next month I will digress to using PLLs with external oscillators. This includes some of the surplus types available that can be easily converted for our use.

In closing

That's it for this month. Feel free to drop me a line if you have something to report. Contributions regarding club projects or proposed activities are always welcome. Just email me at *david@vk5kk.com* and I'll include in the column.

73

David VK5KK.

Meteor Scatter Report

Dr Kevin Johnston VK4UH

Last month the much anticipated Perseid Meteor shower peaked around 12 August. This shower was first described over 2000 years ago and is associated with one of the best visual displays of meteors of the year; at least it is if you live in the northern hemisphere. The shower occurs as the earth passes through debris trails remaining after the passage of Comet Swift-Tuttle, its parent body. The Zenith Hourly Rate (ZHR) was predicted to be over 100 visual meteors/hr. Despite having been actively involved in VHF Meteor Scatter operating for many years, clearly I still have much to learn, particularly so when it comes to operating during Meteor Shower periods. There is more to it than first becomes apparent. This shower highlighted the incorrect assumptions and mistakes I made – even though, in the event, results were good.

During what is normally considered "background" or "random" activity, meteors appear from widespread areas of the sky. Ideal propagation between any two stations occurs when a meteor trail occurs roughly at right angles to the path between the two stations and the signals (returns) are strongest when the meteor trail crosses that line near its midpoint. Trails crossing the path at other points or trajectories can still provide returns however although the pings will likely be weaker or shorter. For example, if you look, it is possible to find returns from local stations by meteor back-scatter while beaming on entirely the opposite azimuth. For "random" activity we know that there is "order in the randomness" with a peak in meteor returns just pre-dawn each day and in the Spring months with a corresponding lull in the afternoons and Autumn periods. But there are meteors 24/7 - if you look.

Meteor Shower operating however is different. During a meteor shower, which of course is superimposed on the background effects as above, time-lapse photography shows the shower meteor trails all appear to emanate from (radiate out of) a single point in the sky; a point termed the Radiant. Each shower occurs on exactly the same date each year when the earth revisits a specific point in its own orbit around the sun and encounters debris remaining from the path of earlier comets. Since the positions of all of the constellations of the stars is also repeated on specific dates each year the showers appear to come from and are named by the constellation where the radiant appears e.g. Orionids from Orion, Aquariids from Aquarius and Perseids from Perseus etc. The meteors are of course not actually coming from those stars; they only appear to be doing so.

Taking advantage of meteor showers, when the number of returns (pings and burns) can be increased enormously in terms of both frequency and intensity, requires a different approach to the usual random meteor scatter operation. Much of this has been covered in previous articles.

Firstly the "date-when"?

This is the easy bit. Since the major showers occur at the same point in the earth orbit around the sun they occur on the same date each

year. These dates can be found from astronomical calendars, from astronomical websites or on-line apps. I use an I-phone app called "Meteor Guide". Although primarily aimed at those interested in visual meteor sightings and predominantly those in the northern hemisphere, they do provide the basic "when" for the equation. The various major showers, and there is almost one every month or two through the year, are not identical. Some have a higher predicted ZHR then others, some peak over a very short period of days, some over a wider period. All this information is freely available from the sources as above. Bearing in mind of course that the predicted ZHR and info are only the celestial equivalent of weather forecasts not weather reports – and we all know just how wrong they can be.

Next the "time-when"

This is starting to get more difficult. Ideally the shower meteor trails still have to cross the path between the two stations at right angles and ideally at the midpoint of that path. This time during the 24-hour day does not necessarily coincide however with dawn of course. There are on-line resources such as Virgo which can show in real-time the position of a specific meteor radiant above the horizon, once the appropriate station coordinates are input. I have yet to find however a resource to allow this to be predicted in advance.

The purple marker and dotted line on my northern horizon (N) represents the position and track of the Perseid Radiant. The propagation path supported by these shower meteors is shown in purple on the compass rose to the right – so supporting East -West paths only.

Coincidentally the SDA (Southern Delta Aquarids) radiant in Red was at about 30 degree elevation in the western sky on that morning and, and as shown in red on the compass rose, was supporting North-South paths: more about this later.

The "where"?

Getting trickier still!

Ideally, as shown above, the shower meteor trails still have to cross the path between any two stations at right angles and ideally at the midpoint of that path. Since the shower meteors are all arising from the same radiant in the sky this requires the radiant (the naming constellation) to be above the horizon for both stations i.e. co-visibility for both stations. Again I have yet to locate a suitable and user friendly resource to allow this to be predicated in advance. Similar facilities exist for EME predictions between paired stations but not for Meteor Scatter. In reality the Perseid Shower this year was way too far north to be of value for paths between VK4 and the southern states. Although we had good visibility of the Perseid radiant in Brisbane, the supported path would

Figure 1: Virgo Meteor Shower Sky Map from 20:00 UTC 11th August 2016.

Meteor Shower	Ref.	Rise	Set	RA	Decl.	ZHR	Class	Visual Activity Peak
Perseids	PER	16:49	22:01	45	57	100	0	2016-08-12 12:36
South. Delta-Aquarids	SDA	09:17	22:15	350	-13	16	1	2016-07-29 22:53
Antihelion Source	ANT	08:08	20:53	331	-10	4	2	
Kappa-Cygnids	KCG	08:58	13:47	284	58	3	2	2016-08-17 17:31
Alpha-Capricornids	CAP	07:28	19:56	319	-6	5	2	2016-07-29 22:53

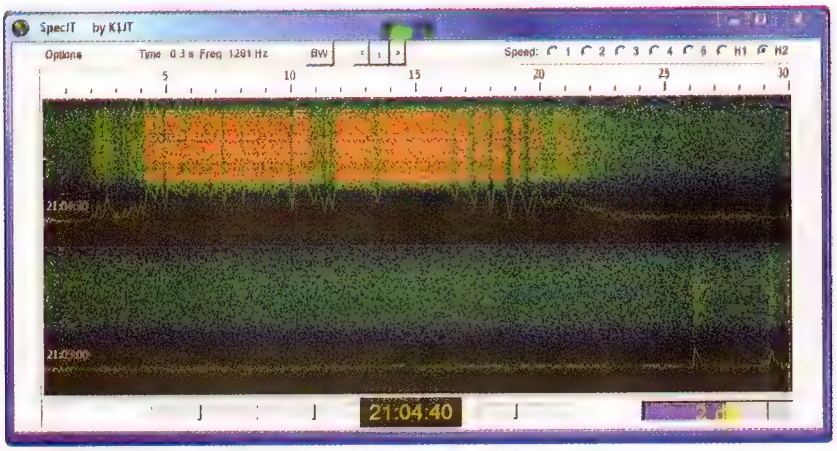


Figure 2: 20 second 144 MHz hyper-dense burn received from VK3II at VK4UH 11.8.16.

have been East-West and there just weren't any target stations to be worked in those directions. For the Southern States the Perseid radiant remained over their northern horizon and was unusable for them.

That being said however, Meteor Scatter conditions were actually excellent on those days, below some examples of burns seen on that day.

In reality, it appears now that the source of the meteors involved in the excellent conditions was most probably the smaller Southern Delta Aquarids (SDA) shower and not the Perseid shower as expected. This conclusion is further supported by the observation that the shower activity continued after the Perseid Radiant had set over the horizon at the VK4UH QTH but stopped immediately and abruptly as the SDA radiant set. So there is still much to learn, at least by the author. More research to do for next year.

I hope in later columns to produce a Meteor-Scatter Calendar for operators in the VK-ZL region.

Another example of "Positive Lateral Thinking" has been put forward by Gavin VK3HY. We have discussed in earlier columns, including my article on "Strategies for managing poor MS conditions", the use of ST-Mode in FSK441 (Short-Text or Single-Tone) as an aid to complete a difficult QSO. The basis of this mode is that once initial contact is made, with the exchange of call-signs and the first report, subsequent exchanges are sent using a single and continuous tone rather than the full FSK machine-gun encoding using all of the normal four tones. R26 is represented by 882 Hz, R27 by 1323 Hz, RRR by 1764 Hz and 73 by 2205 Hz. The mode is selected on the WSJT panel by checking the ST Rx and ST Tx boxes. In this mode the single transmitted frequency alone encodes the report information and requires only the briefest of pings to decode the reports digitally and indeed by the unaided ear. Since there is no other encoded information as to either the source or destination station, in fact only a blank carrier is being transmitted, then ideally ST-mode should only be used when there is a clear channel i.e. only one pair of stations operating, so as to avoid any confusion. Where other traffic is still occurring this previously required a change of frequency. Gavin proposed an alternative and very simple protocol whereby stations wishing to run ST-mode simply switched from USB to LSB mode on their transceivers thus leaving the dial frequency settings unchanged. In effect this shifts the frequency passband LF by 3 kHz and inverts the tone sequences but this is invisible to the operators at each end of the link. I have tried this protocol on-air with Gavin and it is both simple and effective and minimises the possibility of confusion and interference provided that the normal time periods sequencing remains unchanged. Just don't forget to reset back to normal USB after completion when using this "3HY Protocol".

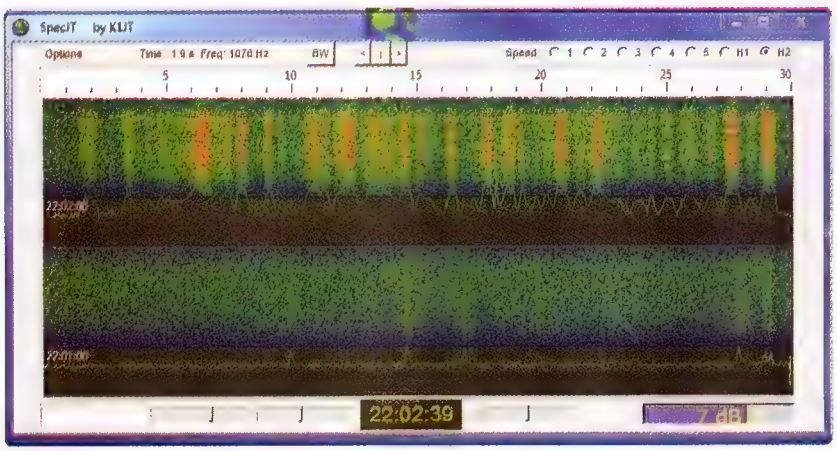


Figure 3: 30 second+ 144 MHz hyper-dense burn received from VK3AMZ at VK4UH 11.8.16.

As I finish writing this column I see that the Minor Fault Warning on my GPSDO is red. We have another Leap second pending.

The next significant Meteor Showers on the calendar will be:

Orionids peaking around **22 October 2016**

Leonids peaking around **17 November 2016**

Any contributions or MS activity reports for this column are always welcome. Spring is here, conditions can only get better from here.

Dr Kevin Johnston VK4UH
Brisbane
vk4uh@wia.org.au

VK2news Men's Shed Lightning Ridge Radio Club

Peter Stonell VK2STO

From a chance meeting with Bob Dixson VK4MR, a new radio club was formed in August 2014.

In November, we got three shedders through the Foundation licence. Thanks to Tony VK5WC/4 and Ed VK4ABX from the Gympie Radio Club spending a week here teaching and Scott VK2UBQ from Dubbo Radio Club with a colleague conducted the assessments over the weekend. Welcome to amateur radio Kevin VK2FOUZ, Chuc VK2FCEP and Caz VK2FCAZ.

The club callsign is VK2SMS and repeater callsign is VK2RMS. The Gympie Radio Club donated and built the repeater for us, offering it on permanent loan: many thanks guys. We built the shack with the help of Men's Shed members and Kevin and I did fundraising selling meat tray raffles on a Thursday evening for three months at the Bowls Club here on the Ridge.

We have two 13.7 m ex TV masts from bygone days when TV reception was difficult. One, extended to 18.3 m, holds the 2 m repeater dipole antennas which is now up and running well on 146.725 MHz with minus 600 kHz shift: any visitors to the Ridge please use it and call us.

Photo 1: Peter VK2STO and Kevin VK2FOUZ outside the Men's Shed.

Photo 2: Peter VK2STO and Kevin VK2FOUZ manning a display to promote the new club.

The other mast has UHF/2 m and UHF CB antennas fitted together with a 30 m long HF Dipole between the two masts.

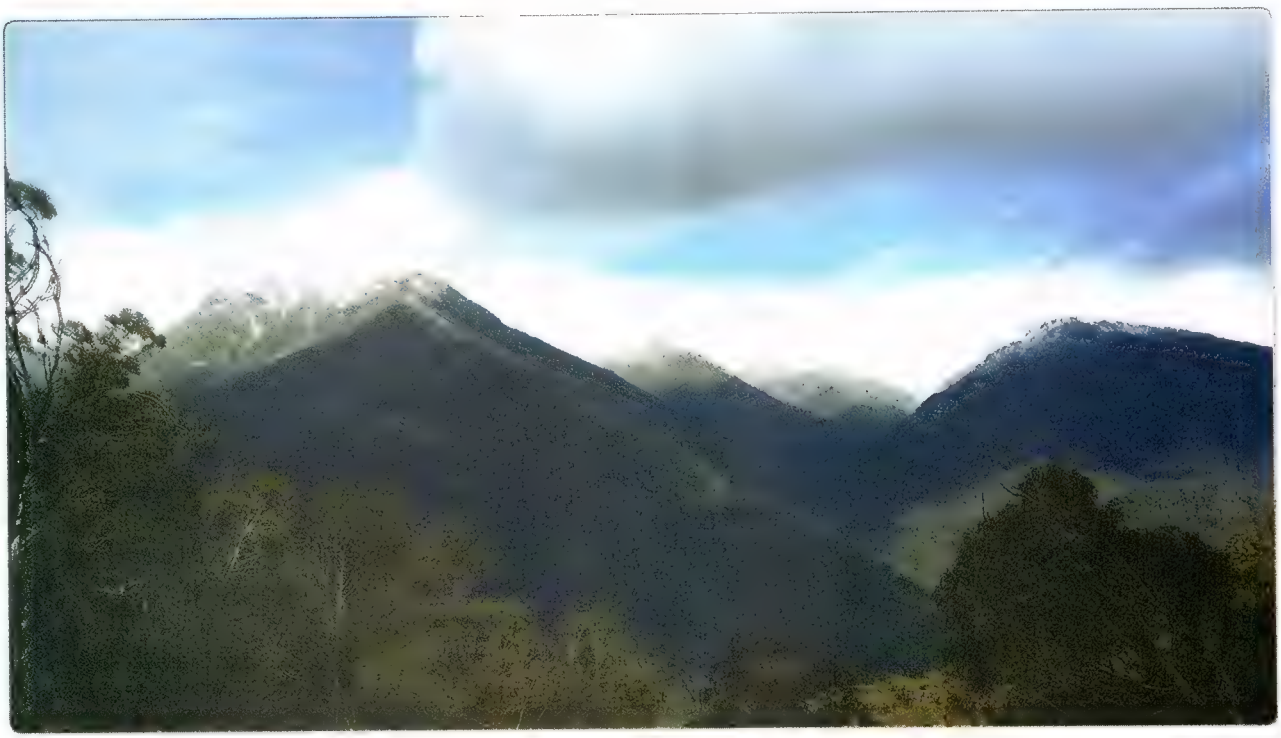
We worked 100 stations on World Telecommunications Day under the call AX2SMS and had great fun doing it. We hope to do another Foundation Course in the future to increase members and to promote amateur radio.

Kevin and I can be found on the 7.130 net most Mondays, Wednesdays and Fridays. Also, Kevin is active most days on his push bike mobile on 40 m: look around 7.100. We have been overwhelmed by the help and response we get from VK and around the world. If you visit the Ridge, please give us a call and drop around to 45 Nobby Road, Lightning Ridge, NSW.

Photo 3: Peter VK2STO receiving the repeater loaned by the Gympie Radio Club.

SOTA & Parks

Allen Harvie VK3ARH



Looking up towards Mt Townsend. Photo courtesy Rob VK2QR.

These are the views you could be enjoying from Snowy Mountains National park next weekend. It's not too late to secure a position and be a part of the action.

SOTA Summit: 1 to 3 October 2016. New and experienced activators welcome.

Contact Rob VK2QR *vk2QR@post.com* for more details.

VK1 QSO party

The weekend of 6/7 August 2016 was the fourth year of this popular event. Mountain Goat Andrew VK1AD ex 1NAM does a fine job of promoting it and rallying VK1s onto hilltops. On Friday 5 August 2016 he posted to SOTA group that there were 19 planned activations recorded at SOTAwatch involving activations across VK1, VK2, VK3, VK5, VK7, VK8 and ZL1; by Saturday this had increased to 30.

These events are always well attended as they provide a great opportunity for Summit to Summit (S2S) contacts. S2S contacts are where the activator gains points for the summits being activated as well as the summit being chased. On a typical weekend the activators are out at the same time so a couple of S2S contacts are not unusual. International S2S contacts are highly prized with several activators frequenting summits just to chase DX.

Whilst the chased summit goes towards your Chaser score, the S2S score is displayed separately. *http://www.sotadata.org.uk/S2sResults.aspx*

VK activators are well represented in this aspect.

With so many opportunities, this was a weekend not to be missed. The main activity is between 2300 and 0100 UTC. Whilst chasers can take a leisurely approach to the day, activators need to plan, as being on time is essential.

I intended to attend and, having been late on previous years, had decided it was not to be the case this time. I selected a summit with good access. This is not the day to be hiking out into the wilderness. Also, the summit in question has good phone coverage. Phone coverage is essential to see where others operating and to be able to self-spot is essential.

I went up to Mt William (VK3/VS-001) in the Grampians. This summit is in the Grampians National Park (VKFF-0213), has good access and phone service. I took a tablet running Peter VK3ZPF's VK Logger application that allowed me to watch the activity and record my contacts.

This summit has a broad open activation area so able to deploy an 80 m antenna. 80 m was certainly the band to be on. 40 m had been a struggle for local contacts in the

run up so expecting the same poor propagation. I was not the only activator to be extending antennas for the weekend, as 80 m was very active.

Being up early paid off with 17 S2S contacts including ZL1 and four Park contacts; an excellent result. Thanks go out to all involved, organisers, activators and chasers; every component is important.

Andrew VK1DA also reports a successful activation:

My VK1 QSO party activation at Mt Ainslie went well, despite the band conditions being a bit flat. As part of my activation notice to the VK1 radio club mailing list I invited visitors to Mt Ainslie so they could see what my setup looked like and how signals sounded in the absence of typical suburban noises. Three visitors from the club did visit and we had a good chat about various aspects of SOTA.

On 20 m, I worked four ZLs, one ZL3 activator and three chasers who were on the air to support the activator. At the end of the operation I had made 42 contacts, including over 10 on 80, a mix of SSB and CW. This was done using a full sized 80 m dipole supported at the centre feedpoint by my 7 m squid pole.

73

Andrew VK1DA/VK2UH

As well as Nick VK2AOH:

Think a good time was had by all Sunday last. For me, I arrived late at Mt Nangar, as it was a 2.5 km very steep in places walking track. Slow going in places, the normal vehicular road had been closed due to the recent heavy rains.

Due to the late start, I contented myself with doing a normal activation with the bonus of plenty of S2S contacts. 80 m proved to be a useful band with three CW S2S plus a couple on SSB giving a total of five S2S on 80 m.

Only 10 contacts in total, pity I could not have gotten to Mt Nangar earlier.

At times, there was a slight drizzling rain with a bit of scramble to cover the radio and notepad. Luckily, the rain eventually cleared off although still rather cold and heavily overcast.

There are excellent views from Mt Nangar lookout; Mt Canobolas can be easily seen.

Had the whole picnic area and table all to myself due to the closed road, which compensated somewhat for the steep trudge up.

DX for me was a complete wipe-out despite lengthy CQ sessions. Only heard a very few faint DX stations the whole time I was at Mt Nangar.

Nangar National Park is a quite attractive place with lots of bird/wildlife and scenic views.

In all enjoyed myself and thanks for the organisers of the VK1 SOTA party and all the chasers.

Cheers, Nick VK2AOH

Other activator blogs available include:

Tony VK3CAT - *https://vk3cat.wordpress.com/2016/08/11/vk1-sota-party/*

Paul VK3HN - *https://vk3hn.wordpress.com/2016/08/07/mt-st-leonard-vk3vc-006-for-the-vk1-sota-qso-party-2016/*

Peter VK3PF - *https://vk3pf.wordpress.com/2016/08/08/vk1-winter-qso-party-2016/*

Andrew VK1AD - *https://vk1nam.wordpress.com/2016/08/05/vk1-sota-qso-party-sunday-7-august-2016/*

VK4 Parks Activations

With Paul VK5PAS continuing to add WWFF parks, all National Parks and Conservation Parks in Queensland now qualify for the World Wide Flora Fauna (WWFF) program. These are timely additions as VK4 activity in on the increase. Recently Rob VK4FFAB activated seven, VK4HNS four, VK4XA two, VK5LOL and VK5YX two - with Hans and Leslie activating some rare remote parks.

Warning

Given that Spring and Summer are just round the corner a timely warning as to snakes. Activators should be carrying first aid kits with attention to compression bandages suitable to address snakebites. Their use to stop or slow the flow of venom in the blood stream to vital organs could be the difference between life and death. It is important to restrict movement as much as possible if bitten by a snake not just of the affected limb but the whole body as the venom is mobilised by the Lymphatic system. Whilst the Aboriginals would lie down and remain still for up to a week then get up and carry on, it's best to bandage the bite and call for assistance.

New SOTA Associations and WWFF Parks

Andrew VK3ARR has been busy reviewing maps and reports that a new Association - New Caledonia FK with 350-odd summits has been added. I am sure that VK activators will frequent this Association.

Paul VK5PAS has been busy again by adding another 339 new parks to the WWFF scheme last month. There are unnamed and unclear areas that are not on the WWFF list. Their status will be revised once the updated CAPAD data comes out at the end of the year. As it stands, there is plenty to go around.

Upcoming Activities

QRP Hours contest to be run on 23 October 2016. A separate section has been included for QRP portable stations running from battery or solar power. For more information, go to VKQRPCLUB.ORG or contact Andrew VK1DA.

The VKFF Team Championship will be held on Sunday 16 October 2016. For more information, go to *http://www.wwffaustralia.com/vkff-team-championship.html*

2016 Keith Roget Memorial National Park Award activation weekend: 11 to 14 November 2016. Contact Tony VK3XV *https://www.amateurradio.com.au/awards*

WWFF Activation weekend 26 to 27 November 2016

Contact Paul *vk5pas@wia.org.au*

73 and 44

Allen VK3ARH

VK4news BARC

Les Neilson VK4FAEB

Presentation

On Friday night 12 August 2016, Jan VK4EBP gave club members a presentation on the use of Software Defined Radio, using his own equipment and software. He explained many of the SDR options and low cost setups as compared to using a normal receiver. All of the hardware displayed was configured by Jan and he showed us his personal experience with SDR using this software and setup. It all gets down to how fast and easy it is to see visual displays of current transmissions on the air at any one time with SDR.

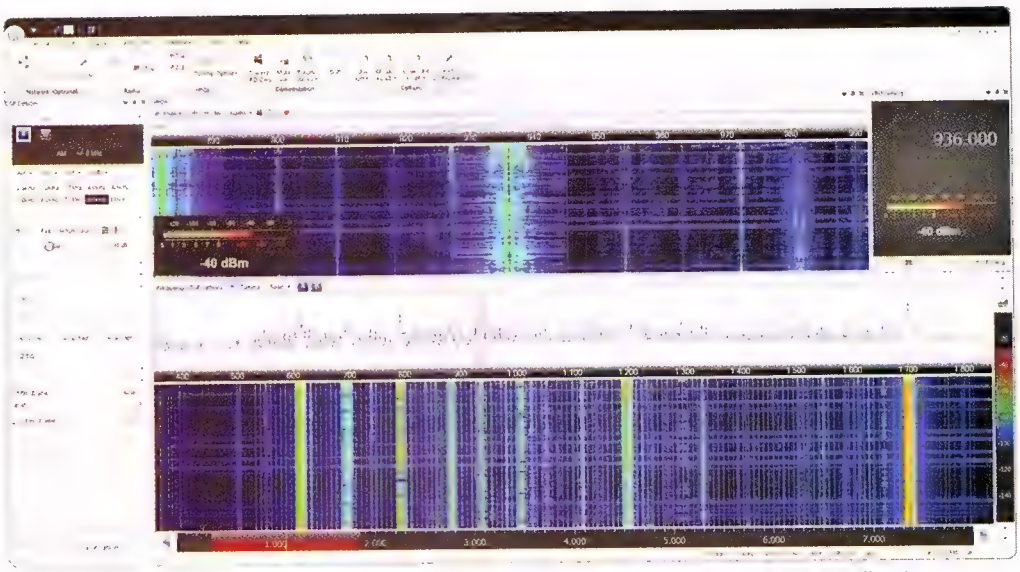


Photo 2: Screenshot of display: The entire AM broadcast band instantaneously visualized, showing both local and interstate transmitters every 9 kHz throughout the entire 531-1701 kHz AM MW (medium wave)/MF (medium frequency) allocation. Our local ABC NewsRadio, 936 kHz, is highlighted in the upper zoom window and selected for reception.

It was an informative insight to the technology that computers can bring to radio communications

There was plenty of information to digest and of course you can start with minimal cost and fuss. A $10 dongle will get you started. The software is free and there is plenty of it and if you have an old computer that can be put into service all you need is to connect an antenna, although some of the dongles do come with an indoor antenna.

Photo 1: Jan VK4EBP.

What are you waiting for? It is a great addition to the radio shack, so go and get one!

Software Defined Radio Receiver Presentation by Jan VK4EBP

Background

Software-defined radio (**SDR**) is a radio communication system which is implemented by means of software on a personal computer.

Amateur and home use

An SDR receiver is likely to supplement, rather than replace the receiver part of a ham radio transceiver and as such it will provide countless opportunities for casual monitoring both within and outside of amateur radio bands.

A typical amateur software defined radio uses a direct conversion receiver. Unlike direct conversion receivers of the more distant past, the mixer technologies used are based on the quadrature sampling detector and the quadrature sampling exciter.

A basic SDR system may consist of a personal computer equipped with a sound card, or other analog-to-digital converter, preceded by some form of RF front end. Significant amounts of signal processing are handed over to the general-purpose processor, rather than being done in special-purpose hardware (electronic circuits). Such a design produces a radio which can receive and transmit widely different radio protocols (sometimes referred to as waveforms) based solely on the software used.

Benefits

- Costs are much lower than a comparable receiver, and if you have an old pc or laptop not doing anything you can put it into service just for SDR.
- Software is free too.
- For Amateurs it gives a visual rainfall display of a wide spectrum of any band that the SDR covers.

- You can see what type of signal it is "CW" "DATA" or "voice" by recognising the signal display.
- Find where transmissions are on the selected band, then you can tune your radio to suit.
- You can also zoom in your range to tune it better.
- You can reduce the band width to capture just the voice signal and remove the carrier and other noises.

Antenna

It would be optimal to have a dedicated broadband receiving antenna to maximise the benefits of an SDR receiver, whilst keeping one's regular station antennas available for QSOs. There is a multitude of choices for broadband antennas both commercial and homebrewed – long wires, folded dipoles and active antennas (such as the BARC club antenna project) for HF and discones for higher frequencies.

One need is to be constantly aware of the limitation of broadband receivers and antennas: this is the ever-present intrusion of out-of-band intermodulation interference from commercial broadcast stations, that is broadcast AM affecting lower HF frequencies, and broadcast FM and TV making their presence felt at upper HF and across the VHF/UHF frequencies.

One thing needs to be added: any receiving antenna must be mounted outside to really do its job properly and preferably in a place furthest away from the building. Sometimes, even a balcony antenna will do quite well. The height does matter for very high frequencies and also for active HF whips. However, for HF and lower frequencies, a ground-mounted receiving loop will do very well.

Operation

As a first line of defence, keeping the RF gain setting relatively low will keep the intermodulation at bay whilst allowing a casual scanning of moderately-strong signals of interest. For more serious monitoring of weak/DX signals, some form of filtering (see "What Next" below) between the antenna and the SDR receiver will be required.

This might include a simple homebrew or commercial preselector (whether active or passive), a small tuned loop or a choice of low-pass/band-pass/band-reject/high-pass filters on HF. For higher bands, coaxial stub filters, tuned active loops or even surplus cavity resonators will do the job nicely.

Whatever your listening interests might be, there will be a simple and inexpensive solution available for your needs – just ask your Colleagues at the club if you need any help in setting it up.

Costs

- SDR dongles start at $10 to your door from EBay, with varying limits of frequency reception.
- Minimal assembly kits that range from $40-48 and have 100 kHz-1.7 GHz full-band software radio R820T+8232.
- and can go up to several hundred dollars for more advanced units that cover all the amateur bands and more.

Note: Jan's Best "Bang For the Buck": SDRPlay – $149 EU so check it out for the best price you can get – search for the SDRPlay Website.

User Review

- SDRPlay is the perfect step up from the RTL-Dongles. Matter of fact if you decide to skip the dongle phase you may want to go straight to this one.
- With very wide coverage from 0.1 MHz to 2 GHz you can listen to just about anything. The very wide bandwidth up to 8 MHz will you to view large swaths of frequencies at once in the SDR software client or even set up multiple VFOs to monitor several frequencies at once. Easy to set up with free SDR software such as HDSDR, SDR-Console, and CubicSDR. Great support from the SDRPlay team is included. This one is a winner.

What Next?

After some discussion with current users of SDR, the biggest hassle is stopping them from being overloaded. One of the next projects we will look at is attenuator boxes, or at least a couple of fixed pads that can be inserted into the receive line to address this issue.

73

Les VK4FAEB.

Silent Key

Keith Adams VK4XAK

BARC wishes to advise that Keith Adams VK4XAK is now a Silent Key. He was an active member of Brisbane Amateur Radio Club as he enjoyed participating in all club activities especially projects.

He also had DX friends around the world, especially in the UK where his friends were recently asking after him. Keith's recent health kept him from his usual radio pursuits which he dearly missed. He will be fondly remembered for his eager and friendly manner with all club members.

VK6news

Keith Bainbridge VK6RK
e *vk6rk@wia.org.au*

Yet another NCRG Hamfest has come and gone, with great success this year; "the best for years" I've been told :)

I'll report in full later in this update but first news from **HARG** and a new source of info from them, Ray VK6ZRW.

HARG

The HARG participated in the ILLW event, setting up next to the North Mole lighthouse at the entrance to the Fremantle Harbour. The weather that day was forecast to be mostly fine with rain clearing in the morning. To ensure they could get set up close to the lighthouse, before the fishermen arrived on mass, Marty VK6RC, Christie VK6XCJ, Martin VK6ZMS and Ray VK6ZRW made an early start. Luckily they did, as they were able to get the club's gazebo set up just in time to use it for protection from the rain. A few good showers came through early on and at one stage it was almost all hands on gazebo to keep it from going swimming. The rain cleared and the sun came out. A great day was had by all.

Quite a few contacts were made using a 9 metre squid pole erected amongst the rocks. A number of radials provided the ground with one long enough to reach the ocean. Many contacts were made with good reports. The vertical above the water sure is a good performer. We had quite a few visitors throughout the day and the interest from the public was great.

Thanks to the NCRG for putting on another great Hamfest this year. The club had several tables and was able to move on some pre-loved equipment. Some members came home with more than they went with which proved a bonus at the next club day.

Photo 1: The HARG gazebo set up beside the North Mole lighthouse for ILLW 2016.

Marty VK6RC brought his newly acquired, pre-loved valve HF amplifier to the club. Steve VK6CS and Al VK6KIF demonstrated their prowess with valves and in no time the lid was off and the amp was having the once over. Al's home brew valve emission tester was a thing of beauty. It's great to be

able to draw on the experience of other club members. We always seem to have someone who knows something about what it is that you want to do.

The new committee met for the first time since the AGM and mapped out a few activities for the coming months as well as locking in the date for next year's HARGfest. We will be holding that next year on Sunday 9th April 2017 to avoid a clash with Easter. There had already been interest from members in an RF camping trip next month, taking advantage of the long weekend, so we will be heading bush again at the end of September. Keep an ear out for VK6AHR / Portable.

HARG Meetings are held twice a month at their club rooms at the Paxhill Guide Hall near the corner of Brady and Sanderson Roads in Lesmurdie. The social and practical meeting is held on the second Saturday of the month and the last Saturday of the month has the general meeting, often with a technical talk or demonstration. Doors open at 1.00 pm for a sausage sizzle and the meeting starts at 2.00 pm. More information at *www.harg.org.au*

73 de Ray VK6ZRW

Thanks Ray for your update into HARG's activities and I look forward to your regular contributions.

Next we have Andrew VK6AXB and news on the ILLW contest activity.

Capes Lighthouse Radio Group – 2016 ILLW report

Anthony VK6AXB reports that VK6CLL had another successful ILLW at Cape Leeuwin, with the team this year being Phil VK6ADF, VK6AXB, Shaun VK6PAL, Matt VK6QS, Steve VK6SJ, also Karl VK6FAAD and Eddie VK6KED joining in for the first time.

The weather was kind enough for us to erect three separate antenna systems, with a mix of dipoles, verticals and a 3-band Spider beam covering 80-15

Photo 2: The raffle first prize held by Stu VK6LSB and Keith VK6RK.

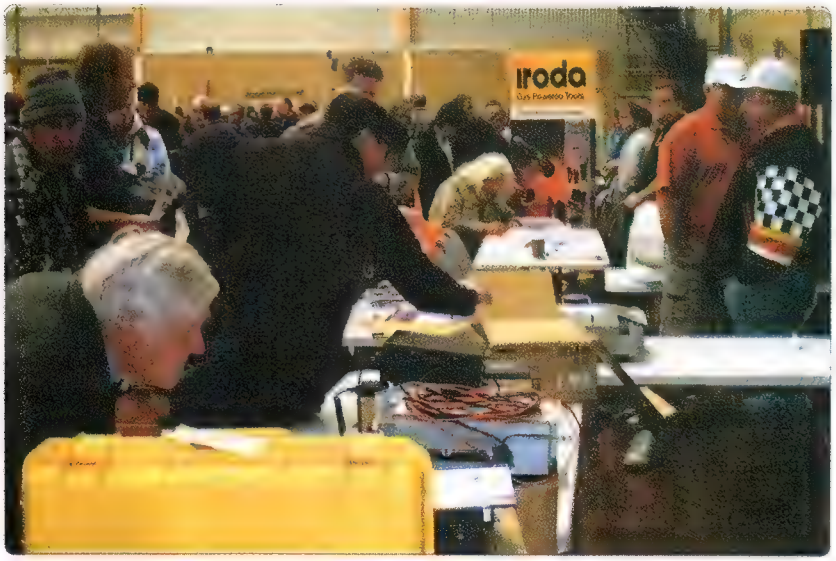
metres. We had the use of several radios, including the new Flex 6300 SDR transceiver and Maestro control display, brought along for us to try by Steve VK6SJ from Future Systems - thank you Steve!

Our operation had received good publicity in the local papers, and many visitors to the lighthouse precinct came past the station for a look.

VK6CLL made around 100 contacts, including 22 other lighthouses. Whilst we worked several European and US stations, ZS and ZL contacts were our only DX lighthouses. As the lighthouse grounds are part of the Leeuwin-Naturaliste National Park, VK6CLL also gave VKFF numbers for the park activation. Many contacts were made around VK, with several stations asking for 160 m – we will make more effort next year and get the 160 m antenna back up.

We also took time to remember Wally VK6YS, who pioneered and led the Cape Leeuwin effort for many years; but sadly became SK in March this year. ILLW was not the same without Wally on one end of the microphone or other – but his photograph was watching over us. (And half the antennas, radios and

Photo 3: The Hamfest had a good crowd in attendance.



accessories were originally his....)

Thanks to all who made VK6CLL happen for another year, and special mention to Phil VK6ADF for producing a great-looking Capes Lighthouse Group bumper sticker! We had a lot of fun, and look forward to being back for ILLW 2017.

Nigel VK6NI reports that the usual crew turned out at Cape Naturaliste; Nigel VK6NI, Jane VK6FJPD (XYL of Nigel) and Michael VK6TU using the call sign VK6CNL. We have been visiting the Cape for nine years and are always welcomed by the tourist association that runs the lighthouse tours. We were able to set up in one of the Light Keeper's cottages that are also used as a shop and ticket selling point for lighthouse tours. This meant there was a steady stream of people walking past our operating point and saw the *AR* activities.

The set up for the operation was fairly simple with antennas for 40 and 20 metres, dipole on 40 m and 2 element mono-bander on 20 m. A light duty rotator was used on the mono-bander which, at one point on the Sunday, saw sustained strong winds and the couplings slip causing a moment's worry and then a re-calibration of the azimuth readout!

We worked 12 lighthouses over the weekend all in Australia, a fairly modest total compared to other years and no New Zealand Lighthouses which is unusual. The long path opened into Europe late on Saturday afternoon and a number of stations were worked but no lighthouses. Working as we were in the tourist precinct we had to shut down around 5 pm on the Saturday and missed out on the opportunity to work 40 m and 80 m after dark that would have probably netted a few more lighthouses.

Steve VK6SJ dropped in on Sunday afternoon just in time to help us finish off and pack up after another great activation of VK6CNL at Cape Naturaliste.

Thanks Andrew and Nigel, sounds like it was a lot of fun!

Still in the South-West the latest contribution from Norm VK6GOM and the Bunbury Radio Club is up next.

Bunbury Radio Club

The main event of the past month was the Club's involvement in the International Lighthouse Weekend with a significant improvement over the previous year's performance. As well as many non-lighthouse contacts, we managed to work twelve other lighthouses, which was a good effort considering our modest antenna setup. Initially we ran a trapped vertical and a one metre square magnetic loop. For many of us this was our first exposure to this latter antenna and we were pleasantly surprised at its performance, particularly the relatively low noise level. Later on the loop became operationally disadvantaged (also known as US). A G5RV was strung up to replace it, but did not perform anywhere as well as the loop.

We also had several visitors drop in to see what we were up to, including the training officer of the local SES unit. Consequently we have been invited to give a talk on ham radio to the local SES unit.

Once again we were catered for by Darren (VK6FGWN) and his famous chili sauce. It is reported that some of us only attend so we can taste his cooking. Much fun was had by all; the only problem was trying to get our esteemed President, Richard (VK6VRO) out of bed in the morning.

The next monthly meeting of the Bunbury Radio Club will be held on Saturday, 10 September 2016 from 2:00 pm at 21 Halsey Street, Bunbury. Visitors are very welcome.

The technical program for the rest of this calendar year is as follows:

September - Shaun VK6PAL
Emergency Services Incident Control

November - Shaun VK6PAL
How to build a home brew antenna analyser

December - Richard VK6PZT
Raspberry Pi and robots

February - Bob VK66TJ
AM Broadcasting

March - Shaun VK6PAL
AIIMS

At the licence assessments held on 23 July 2016, one person passed his Foundation licence and two their Standard regulations.

Any South West based amateur (or anyone interested in radio or electronics) is more than welcome to join and participate in our

Photo 4: Mike receiving the first prize.

activities. Because so many of our members come from near and far we are evolving into a semi "virtual" club. Consequently, regular attendance at meetings is not a requisite for membership. The annual fee is only $50.00. Those wishing to join can contact the Club via our Secretary, Nick Evans on 0429 201 343, or *vk6brc@wia.org.au*. Further details can be found on our website at *http://bunburyradioclub.wordpress.com*

Now down to the Hamfest business.

This year's **NCRG** Hamfest was the 29th as far as we can remember, and was a roaring success, thankfully!

It takes a lot of planning and a lot of luck for things to come together on the day and this year we seem to have achieved our aims.

The only down side was the sudden cancellation by ICRAR, the International Centre for Radio Astronomy Research, as their demo equipment was confiscated by the University of WA for use over that weekend. They hope to make it next year.

This year, with help from Icom and RF Solutions, we were able to buy an Icom IC 7300 and put it up for the raffle first prize. Other prizes of an Comet 3 band vertical from Future Systems, a Baofeng handheld from VK4ICE communications and a full Ozito hand-tool collection from Australian Railway Signaling made for a good raffle !

Ticket sales were brisk and the 350 or so folks through the door kept the ticket team busy.

The winners were as follows.

1st VK6MB - Mike Beall
IC 7300 ticket number 0340

2nd VK6QS - Matt Shurmer
Comet Antenna ticket number 0674

3rd VK6NOL - Larry Minshull
Boafeng ticket number 0244

An additional prize of an Ozito Combination power tool kit was won by Mel VK6ER.

It was nice to see a return of commercial traders this year with Future Systems, Bushcomm and TET Emtron attending and a static display from RF Solutions and Icom Australia; again thank you all for your support. We look forward to seeing you all again next year.

This years Homebrew Contest was won by Richard VK6TT with his two entries. It was somewhat disappointing as last year there were 15 or more entries and this year only the two; excellent entries they were too. Maybe we can encourage more next year for our 30th anniversary Hamfest?

As always, Hamfest is a great place to catch up those we only see once a year even if we speak to them almost every day. To me that is the best part about the day, the catching up, and the realisation that the projects we spoke about at the last Hamfest are still awaiting completion.

As I'm now officially retired, maybe my projects list will start to shorten.

So, thanks to all those who attended, especially the groups, clubs and individuals who filled the table with their rubbish, sorry, treasures and we will be putting a small survey form on the ncrg.org.au website. We would appreciate your input and comments.

Maybe we can adopt some of them for next year's event.

Grateful thanks to our prize donors, without you it would be really hard work.

Other club activities include the acquisition of a new base station radio and an amplifier to use on our remote station setup, thanks to Lotteries WA!! If you don't ask you don't get.

That's it for this month, 73
Keith VK6RK

Over to you

10 years of Foundation licence Assessment

I was pleased and honoured when President Phil presented me with a certificate recognising my contribution to the FL assessment process.

This reminded me of the early days when FL was first proposed and the lively debates between the 'for' and 'against' viewpoints and the operating privileges that may be granted.

At this time the RSGB, together with the UK Regulator, had introduced a successful trial that was seen as an example of what could be achieved.

Strongly supported by our President at the time, the late Peter Naish, I applied for a Churchill Fellowship to travel to the UK to study the matter. Peter requested that I make particular note of the problems that had arisen, the views of existing UK amateurs and the solutions developed.

The President of the RSGB strongly supported my proposed visit and prepared an Itinerary in conjunction with a selection of Clubs around the UK.

My well supported application was lodged. Imagine my surprise when two days after closing date I received a letter advising me that my application was unsuccessful.

Clearly it was rejected out of hand early on.

I telephoned Peter Naish to tell him. Peter was a cool calm senior person who never showed anger. Not this time – he exploded and instructed me to lodge an appeal immediately. I enquired and was curtly informed that there is no appeal process and the committee's decision is final.

My next surprise was a couple of years later when a VK amateur was awarded a Churchill Fellowship to travel to USA to study 'WinLink' , an email system on our HF bands widely supported at that time by unlicensed blue water yachties and opposed by the WIA and the Department.

I never did discover the reasons for the Churchill Fellowship Committee decisions. And now it does not really matter…

Gilbert Hughes VK1GH

VK7news

Justin Giles-Clark VK7TW
e *vk7tw@wia.org.au*
w *https://groups.yahoo.com/neo/groups/vk7regionalnews/info*

International Lighthouse and Lightship Weekend in VK7

We had seven Lighthouses and a navigation light activated within VK7:

Callsign	Lighthouse / Nav Light	ILLW Number
VK3VTH/7	Currie Light, King Island	AU0016
VK7EK	Table Cape Lighthouse	AU0039
VK7HKN & VK7FROG	Cape Tourville	AU0119
VK7LH	Low Head	AU0048
VK7NW	Mersey Bluff	AU0040
VK7NWT	Round Hill Point	AU0111
VK7TAZ	Eddystone Point	AU0087
VK7VTX & VK7ADQ	Pot Boil Channel Light – Flinders Island	??
VK7WCN	Bluff Hill Point	AU0081

Kevin VK7HKN and Lyn VK7FROG were at Cape Tourville and made over 40 contacts along with Andrew VK7DW and Pat VK7FPLT. Roger VK7ARN, Peter VK7TPE and Garry VK7JGD activated VK7WCN at the Bluff Hill Point Light and battled the windy conditions and made many interesting contacts with other ILLW stations. Yvonne VK7FYMX and Bill VK7MX activated the Eddystone Lighthouse along with Stuart VK7FEAT, Idris VK7ZIR and André VK7ZAB all operating VK7TAZ and made well over 50 contacts all over the world.

Photo 1: Garry VK7JGD, Peter VK7TPE and Roger VK7ARN at Bluff Hill Point Lighthouse. (Photo courtesy of Roger VK7ARN.)

North West Tasmania Radio and TeleVision Group (NWTR&TVG)

Congratulations to Helen Thompson who passed her Foundation licence assessment in late August. Helen is partner to Jonathon VK6JON (soon to become VK7JON) and they have recently moved from VK6. Helen has applied for VK7FOLK.

Northern Tasmanian Amateur Radio Club (NTARC)

NTARC provided safety communications for the Joy Lette Memorial Ride at Santarena Park in Scottsdale. This was an equine endurance event with 3 checkpoints and base for a 20, 40 and 80 km ride. NTARC's mid-winter warming event went well at Steve's Grill, Centennial Hotel Launceston with good food and company making for a great night.

Radio and Electronics Association of Southern Tasmania (REAST)

The 23 cm QSO parties are continuing in Hobart with a record number of 11 participating in late August. Mount Wellington again is our passive reflector and FM and SSB modes are being used locally and WSJT (JT65c) is being used between Hobart and Launceston.

REAST's August Presentation was titled **GippsTech at REAST** and featured videos of two of the talks given at GippsTech by Julie VK3FOWL and Joe VK3YSP on building and programming a mini satellite Az-El Rotator, then Dave

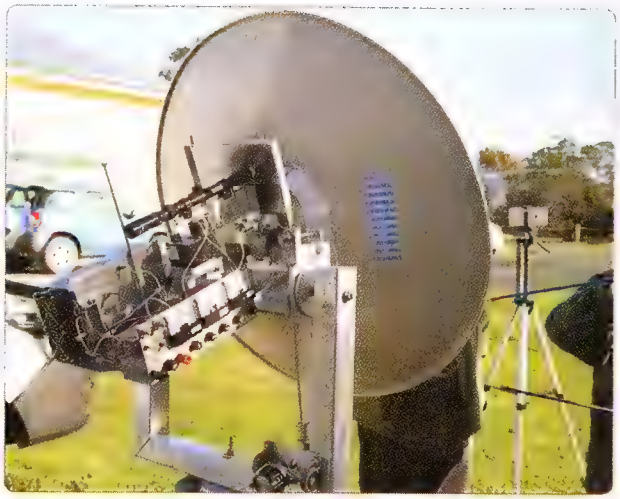


Photo 2: Rex VK7MO's 10GHz EME rig. (Photo courtesy of Ben VK7BEN.)

Group (SDRSIG) thanks to Scott VK7LXX and the first meeting saw VK7BEN's RTLSDR, Scott's Genesis Radio GPA10 kit, the author's HPSDR Penny Whistle amp and skywave Linux notebook with RTL dongle to receive the DATV signal on 446.5 MHz; thanks Scott.

DATV nights continue with Steve VK7OO and his 160 and 80 m magnetic loop, thanks Steve; Rex VK7MO with his new GaN 10 GHz power amplifier and EME experiments, thanks Rex, Sean VK7FAZE took us through his LIPD RF connected terminals, thanks Sean; the author's RaspberryPi3 and 7 inch touch screen as an SDR control surface, standard and not so standard nixie tubes and a 10 GHz YIG oscillator project. Our videos included many from the 48 Hour International Antarctic Film Festival, very entertaining! Videos also included the SDR academy presentations held at this year's Friedrichshafen Hamfest.

VK2JDH on using your Android phone or tablet as a GUI for your Arduino home brew projects. Thanks to Peter VK3PF and the presenters who allowed me to video the presentations. The REAST club has been holding monthly Saturday activity sessions and last month saw Rex VK7MO and his 10 GHz portable EME rig demonstrating JT4 weak signal mode and making contact with the OK1KIR Team in Prague. Thanks Rex.

REAST participated in the Festival of Bright Ideas for Science Week and this is covered in a separate story. REAST has also started an SDR Special Interest

Photo 3: Yvonne VK7FYMX and Bill VK7MX logging riders at the Equine Event. (Photo courtesy of Alvin VK7ADQ.)

Silent Key

Bryan Maxwell Eyre VK7KBE

Born 1st Sept 1938 - Died 3rd August 2016.

Bryan was licenced in the early 1960s and his first call sign was VK7ZBE. Known as "Basil" to most of the VHF Group and started working life in the PMG's Department looking after radio installations. There wasn't much Bryan didn't know about commercial AM broadcast transmitters.

Bryan was very active in the VHF group with 6 and 2 metre AM transmitters, converters feeding into an IF about 6 MHz, and super regenerative and modulated oscillators on 288 MHz. He participated in the evening fox hunts on 2 metres chasing a transmitted tone with a beam.

In the late 1960s, he did a 12 month stretch in Antarctica and came back and started Eyre Electronics in Devonport. He was a devotee of Jazz and attended many of the Jazz festivals around Tasmania. One had to be strong to resist his hospitality with the brandy and dry and he never lost his sense of humour!

Bryan was a regular on the VK7 Sewing Circle Net, a forum where he regaled the participants and short wave listeners with humorous anecdotes, matters of an electronic technical nature, lessons in geography and recipes for lunch and dinner etc.

Antenna advice was always succinct and practical. Balun advice was also succinct but not so practical. If ever there was a topic to draw Bryan into a discussion it was that four letter word (in his opinion) balun!

At the annual "Meet the Voice event at Ross" Bryan would bring out the magic musical box and the music of Smacka Fitzgibbon would be heard. Thank you Bryan for the good times and they were all good.

Vale Bryan.

(Phil Corby VK7ZAX and Cedric VK7CL)

Spring VHF/UHF Field Day Saturday 26 & Sunday 27 November 2016

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AR is a forum for WIA members' amateur radio experiments, experiences, opinions and news.

Your contribution and feedback is welcomed.

Guidelines for contributors can be found in the AR section of the WIA website, at *http://www.wia.org.au/members/armag/contributing/*

Email the Editor:
editor@wia.org.au

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10 Antarctic contacts & many more!...
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Contests

Want to test yourself? And your station?
HF. VHF/UHF. Field days. Local and multi-national contests
Sponsored, promoted and administered by the WIA

WIA Bookshop

All the must-have books covering your needs
Extensive range
Members get a discount!

Support For Your Local Club

Resources for club education and exam services
Public liability insurance
Beacon and repeater licence coordination
Promoting club activities and events

Working for You

Advancing and Protecting Our Interests and Privileges

Every licensee has a stake!
Your voice with the authorities – nationally (ACMA) and globally (ITU)
Collective action over decades achieved all we enjoy today
Fought off proposed huge licence fees in the 1990s
Simplification of licences - 5 reduced to 3
Introduction of the Foundation licence
Removal of Morse code test for HF band operation
New frequency allocations: 80 metre DX window; 136 kHz; 475 kHz
Gained more operating modes and technologies
Unique callsigns and prefixes for special occasions
Ensuring our privileges are aligned internationally

Protecting Our Spectrum

Retained continuing access to the 70 cm band
Acting to have intruders removed from our bands
Opposing interference threats from technologies such as BPL

Licence Exams and Certificates

Organising and administering licence exams
Training and qualifying exam assessors
Your Certificate of Proficiency – issued by the WIA

Callsigns

Passed your exam? We have a callsign for you!
Want a new callsign? We can arrange that!

National News Service

Keep up-to-date
Weekly broadcasts – 30 minutes of national news
Also online in text and audio
Website news bulletins - reported "as it happens"

WIA Around the World

The work of the WIA extends beyond Australia's borders.

The Institute is a member of the **International Amateur Radio Union** (IARU), which advocates and represents amateurs' interests to the **International Telecommunications Union** and at the important **World Radio Conferences**. Nations around the world attend these Conferences, held every few years, to determine global radio regulations and frequency allocations. Australian amateur radio bands are allocated from these global decisions.

The WIA is involved in Australia's preparations for the World Radio Conferences and attends with the Australian delegation. Institute volunteers do this work. WIA attendance is funded by the Institute on behalf of all Australian radio amateurs.

Time to renew your membership? Look over the list again.

Renew online:

https://wiamembers.memnet.com.au/

Encourage a friend to join.

Show them this – and then send them to: www.wia.org.au/joinwia/wia/onlinejoin/

Or call (03) 9729 0400 (9 am to 3 pm, Mon. to Fri.)

The Wireless Institute of Australia

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